PROCEEDINGS OF THE
INTERNATIONAL CONGRESS ON

TECHNOLOGY AND BLINDNESS

GENERAL CHAIRMAN: JEROME B. WIESNER
ASSOCIATE CHAIRMEN: M. ROBERT BARNETT
N. CHARLES HOLOPIGIAN
EDITOR OF THE *Proceedings*: LESLIE L. CLARK

VOLUME IV

CATALOG APPENDIX

New York 1963
THE AMERICAN FOUNDATION FOR THE BLIND

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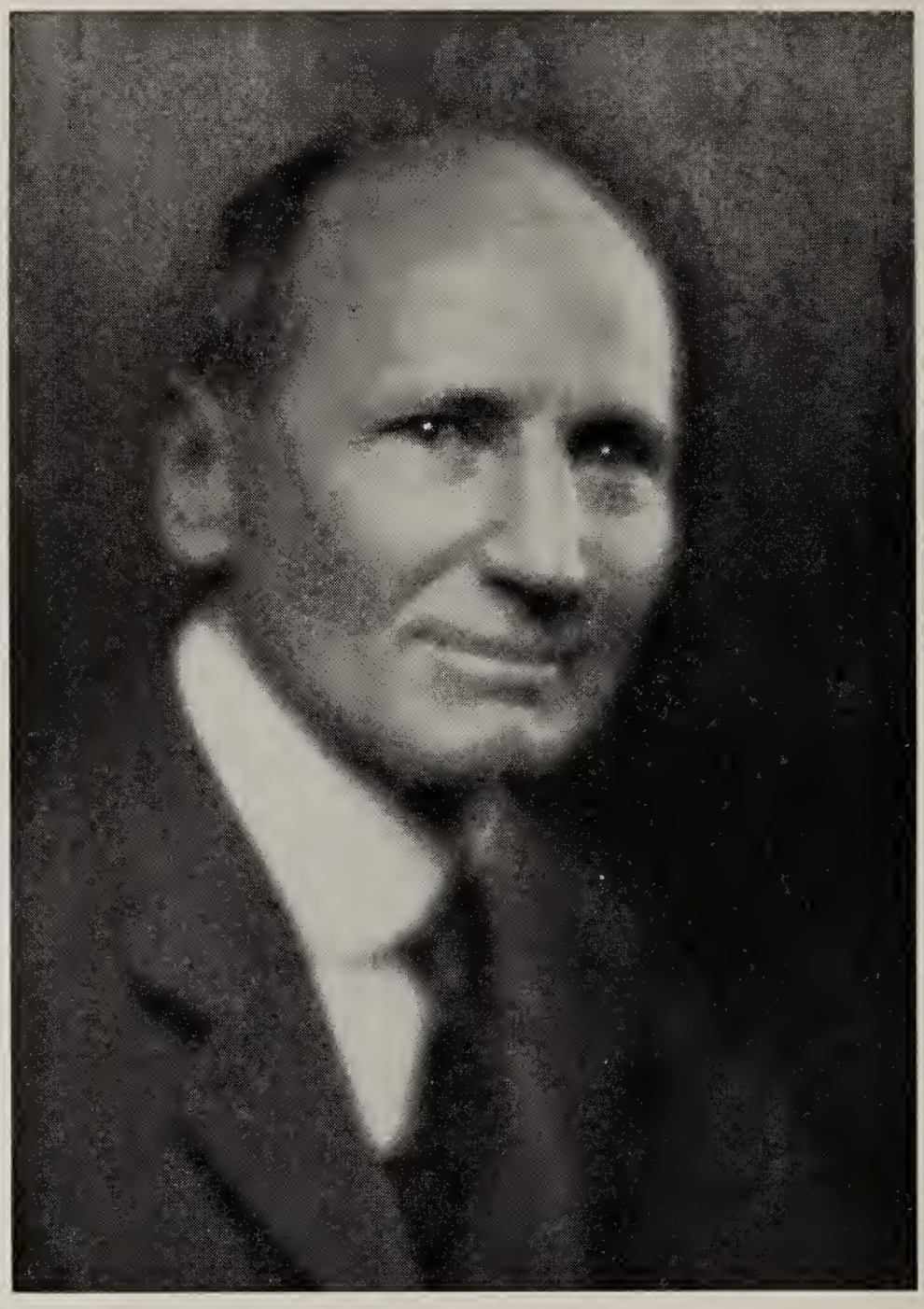

The late Gustavus E. Pfeiffer, an outstanding philanthropic leader, was concerned particularly with the problems of blind persons. He served as a Trustee of the American Foundation for the Blind from 1932 to 1953. The Foundation which bears the name of Mr. and Mrs. Gustavus E. Pfeiffer felt that the subject matter of these Proceedings *was clearly an extension of his own interest in sound research applied to the cause of human welfare. This book is dedicated to him and to our recommitment to his ideals.*

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15 WEST 16TH STREET, NEW YORK 11, N. Y.

SECOND EDITION

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FOREWORD

This volume, the fourth and final in the series containing the Proceedings of the International Congress on Technology and Blindness, held in New York City on 18 through 22 June 1962, has been added to our original publication program. The addition was made in deference to the many and persistent requests of numerous persons over the years for a comprehensive review of technical devices for the use of blind and visually impaired individuals.

The Catalog Appendix contains not only data issuing from the Congress, but also in large measure represents the results of the international survey of technical devices, a project which preceded the Congress and which included preparations for the Congress.

The report was made possible by a grant from the Gustavus and Louise Pfeiffer Research Foundation, to whom we express grateful acknowledgement.

While the American Foundation for the Blind was privileged to carry out the responsibility of the survey and the details of the Congress, it is apparent that no such study is ever accomplished by just one organization. The organizations and individuals who cooperated with us included virtually all those who were aware of a contribution they had to make; all of them should be commended for a fine example of an unselfish willingness to share.

Projects of this type are also expensive. The American Foundation for the Blind wishes particularly to acknowledge the financial support of the Office of Vocational Rehabilitation, Department of Health, Education, and Welfare; the National Science Foundation; the Irene Heinz Given and John LaPorte Given Foundation; Howe Press of Perkins School for the Blind; and the Gustavus and Louise Pfeiffer Research Foundation. Whatever degree of success the survey and the Congress enjoyed would certainly have been impossible without the assistance of these organizations.

The American Foundation for the Blind also wishes to recognize the invaluable cooperation of the American Foundation for Overseas Blind, and the World Council for the Welfare of the Blind, in helping these projects in many ways. Our several national and international bodies in

the field of education, rehabilitation, and social improvement of the lives of blind persons have pledged that this effort is not simply a burst of enthusiasm, but that its real findings will guide many of our future activities.

As the Editor points out, it may be thought that the present volume is but the forerunner of a number of revisions, each of which will increase the usefulness of the data for scientists, researchers, and all those who work with the visually impaired.

The decision to bind in paper is a reflection of our hope that the decision to publish would inevitably entail another decision to republish the volume with many additions and improvements.

M. Robert Barnett
Executive Director
American Foundation for the Blind

INTRODUCTION

This volume represents a first attempt to compile an international catalog of material aids for the education, rehabilitation, and personal aid of visually impaired and blind persons. It is also an addition created in some haste to accompany these Proceedings of the International Congress on Technology and Blindness. For both these reasons, this work should be regarded as a prologomena to a much larger effort still to be expended—one which will come closer still to meeting the needs which the volume was created to fulfill. These needs encompass the special and several requirements of the vocational rehabilitation counselor, the researcher new to research on sensory devices, administrators of programs for the visually impaired, the individual innovator of a device for the visually impaired, and others.

The sources of information for the book were many. It was taken from papers given at the International Congress; from catalogs of aids for the blind from five countries; and a substantial addition was made possible by drawing upon the information collected during the course of the international survey of technical devices, a project undertaken by the American Foundation for the Blind as part of the preparation for this International Congress. Publications of a wide variety of types were utilized also.

Because the scope of the catalog is so broad, however, it would be foolish indeed to assume that it is also exhaustive. Data are particularly meager from the emerging countries; from Asia; and for the historical chronicle of aids for the blind which extend back further than about 30 to 40 years ago.

The careful reader will undoubtedly note many other gaps in our information. Some exist because we could not gather a sufficient amount of information on certain devices before publication deadlines; others are due to the extreme difficulty of obtaining information about them. The most important class of omissions, however, includes techniques. The importance of suitable techniques to the blind worker, housewife, student, etc., lies in the fact that a suitable technique, once perfected, may alleviate or even eliminate the need for a special or adapted device (the same point could be made for suitable training). Yet a catalog of techniques for the use of the blind and the visually impaired remains yet to be written. A begin-

ning has been made during the course of the international survey; and others are now involved in developing descriptions of techniques in specialized fields. It may be hoped that before long we will have sufficient information that a revision will be called for to the present listing. I think it safe to say, also, that should the response to the present attempt warrant, serious consideration will be given to periodical revision and addition to these materials. For the present, we can suggest that readers who wish to contribute additional information can send materials to the Editor, *Research Bulletin,* Division of Research, American Foundation for the Blind, or to the Director of the Royal National Institute for the Blind.

The organization of the information is fairly straightforward, and depends largely on the principle of the functional relationship of the individual user to the device listed. Thus, the material is divided into two large categories: Special Purpose and Adapted Devices, and General Purpose Devices. The first group comprises all those devices created or adapted especially for use by the blind; the second group includes those devices readily and generally obtainable which have found particular applications in use by the visually impaired for one reason or another.

The principle of functional relationship does result in a few apparent anomalies, however, which it would be wise for the reader/searcher to keep in mind. If one is interested in finding out, for example, what devices are used to help in the task of educating the visually impaired in one or more fields of knowledge, he would look in the section titled Educational; but if one is interested in those aids developed to assist the blind teacher himself, he would look under Vocational Aids. In all cases, the purpose for which the device was created has been kept in mind, and it is this special relationship to the individual user which plays the primary role in our classification of it.

Partly for this reason, the reader will note that the class of Personal Aids is large: these are devices which permit the individual to attain a more or less easeful relationship with his individual environment, and therefore find application in a wide variety of situations at home, in the office or school, on the job. Devices which are meant primarily to help the housewife will be found under Household Aids; those which enable a visually impaired worker to do his job will be found under Vocational Aids.

Format of the entries has been kept uniform to aid the eye in its search for information, and we have attempted to aid the reader further by inserting a dictionary type of heading on each page showing the beginning and ending entries. For each entry, we have given the name of the device;

the source of what information we have about it; its availability; and any descriptive remarks we hoped would be helpful. The reader will note that many devices listed are now unavailable and discontinued; in some cases because items were deleted from a catalog, in other cases because the research which led to the creation of a device has ended. Particularly in the latter case, we have gone on to give the principle of operation of the device because, with so much repetition of developmental research, it is often quite helpful to know the predecessors of a much-hailed solution to a chronic problem of the visually impaired which a new device is claimed to solve.

We should repeat, and we should keep in mind in using these pages, that this listing should be considered as only a first attempt, and incomplete. Corrections and additional data from the users of this volume would be welcomed warmly. Our decision to bind this volume in paper is in fact an expression of our belief that a revised second edition can and will be an improvement on the first edition. With your help and cooperation this will be so.

L. L. Clark

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N. B. Prices quoted in this Catalog were those available at the time of publication. It is suggested that readers interested in any of the devices described write directly to suppliers for up-to-date price information.

Special Purpose and Adapted Devices

BRAILLE DUPLICATION

LARGE SCALE BRAILLE DUPLICATION

Name: Large Scale Braille Duplicators
Source: Braille stereotyping machines are now made in several countries, among them:
England: B. J. Lynes, Ltd., London
Germany: Blindenstudienanstalt, Marburg/Lahn
Japan: Nakamura Braille Manufacturing Co., Tokyo, Kobayashi Iron Factory, Tokyo (both distributed by Nippon Lighthouse for the Blind, Osaka)
U. S.: American Printing House for the Blind, Louisville, Kentucky; Howe Press of Perkins School for the Blind, Watertown, Massachusetts; Braille Institute of America, Los Angeles, California
The latest model stereotyping machines are operated by motor drives. Plate movement is automatic, and they produce double-sided interline or interpoint prints. Each page contains between 23 and 32 lines of 36 and 42 cells. Most stereotypers are equipped with one braille type standard; some with small, medium and large.

Name: Addressograph-Multigraph Machine
Source: Addressograph-Multigraph Corporation, Cleveland, Ohio
Availability: Production prototype
This machine reproduces braille in nearly any quantity at low cost and at speeds of mechanical reproduction. A special braille "type" can be set in a hand composing fork, a line at a time, and inserted into channels cut in the drums of standard multigraph duplicators. This makes possible repetitive mechanical reproduction and enables virtually limitless copies of the braille material to be produced.

Name: APH Computer-Controlled System
Source: APH
Availability: Experimental prototype
The system comprises three units: 1) an input unit for originating and verifying punched cards for tape; 2) an IBM 704 computer for translation from inkprint code to Grade 2 braille code; 3) output buffer to control a braille plate embossing machine. This system requires human intervention in the braille production process only for checking the accuracy of the embossed plate.

Name: Braillewriter and Duplicator
Source: Technische Hogeschool
Availability: Experimental prototype
Perforated type is processed in an IBM computer which has as its output a tape programmed in braille. This tape is then fed to an electric braillewriter which can print a line at a time with a speed of 10/15 lines per second. Instructions for format (end of line, end of page, etc.) are included on the tape. In this way a complete braille book can be reproduced in a few hours' time.

Name: Edwards V.F.2 Vacuum Forming Machine
Source: W. Edwards & Company, Ltd., Crawley, England
Availability: Supplier, above
With this new vacuum forming process now being used by RNIB, braille literature and highly detailed relief maps can be produced on flexible cellulose acetate sheets at an economic rate. Four standard sized braille sheets can be formed at each operation with an expected average of approximately 450 sheets per hour. Copies can be taken from hand-printed manila sheets. The system can also be used in the production of Moon type.
In use, the original braille sheets or master are laid on the forming table of the machine with the surfaced side uppermost, and a sheet of cellulose acetate is placed in position covering them and overlapping the continuous rubber sealing ring provided to ensure maintenance of the vacuum. A steel frame is then lowered and clamped around the edges of the sheet, and a heater pad pulled into position. When the sheet has become taut, the heater is pushed back and a valve opened to exhaust the air from the underside of the material.

Name: Gestetner Braille Duplicating System
Source: Gestetner Ltd., London, England
Availability: Supplier, above
The Gestetner method makes use of the Improved Stainsby writer for cutting the required characters on a braille stencil. Copies are produced with a Gestetner duplicator in the ordinary way, except that while the printed dots of the braille characters are still wet they are dusted with a heat-sensitive resin powder, known as Gestetner Braille Powder, and passed through a heater. This causes the dots to harden and become fixed to the paper.

Name: Hall Stereotyper
Source: Frank Hall/Illinois School for the Blind, Jacksonville, Illinois
Availability: circ. 1893—discontinued
Braille was embossed on a thin brass sheet which served as a master and was fitted into a hand press. When paper was placed over the brass plate and pressure applied the braille characters were transferred. (This model is thought to be the first stereotyper produced.)

Name: Kobayashi Braille Printing Press
Source: Lighthouse, Welfare Center for the Blind
Availability: Kobayashi Iron Factory 100,000 yen
Electrically operated.

Name: Nakamura Braille Printing Press
Source: Lighthouse, Welfare Center for the Blind
Availability: Nakamura Braille Manufacturing Co. 50,000 yen
Electrically operated.

Name: Kobayashi Braille Writer
Source: Lighthouse, Welfare Center for the Blind
Availability: Kobayashi Iron Factory 20,000 yen

Name: Kobayashi Stereotyper
Source: Lighthouse, Welfare Center for the Blind
Availability: Kobayashi Iron Factory 125,000 yen
Foot operated; includes necessary accessories.

Name: Lighthouse Braille Printing Press
Source: Lighthouse, Welfare Center for the Blind
Availability: Nisshin Conveyer Manufacturing Co., Ltd. 550,000 yen
It is electrically operated by four persons usually and can print 2000 sheets in an hour.

Name: Marburg Braille Plate Embossing Machine
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
This machine is designed for making stereotype plates in braille point writing. It is flexible with respect to spacing, point height, etc., and corrections can be made easily by pressing back on unwanted points with the embossing stylus. Embossing is done by pressing the finger on an actuating button which presses the stylus in the appropriate part of the braille cell. Quite high speeds of embossing are possible.

Name: Marburg Rotary Braille Press
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
This rotary press for the printing of braille materials is electrically operated. It has two cylindrical faces, each of which takes one plate. A large roll of paper feeds the space between the rollers, and two sides of a braille page are printed at once. Maximum printing speed is about 6000 pages per hour. Various sizes of plates may be printed.

Name: Multigraph Braille Duplicator
Source: Addressograph-Multigraph Corporation, Chicago, Illinois
Availability: Supplier, above Range—$345 (smallest size) to $1375 (largest size)
This machine is available in three sheet sizes: 8 inches by 8¾ inches; 11 inches by 16 inches; 13 inches by 17 inches. With the machine sizes available, only single sheets of 11 inches by 11½ inches can be embossed; therefore, single sheet bindary processes must be used except in smaller sizes.
The machine is normally furnished for hand operation, but it should be possible to fit it with a motor drive with a minimum of time and cost.

Name: Nakamura Braille Stereotyper
Source: Lighthouse, Welfare Center for the Blind
Availability: Nakamura Braille Manufacturing Co.

NBW-IL-2: (Interlining) 32 cells, 18 lines, with necessary accessories for correction; operated by foot. 150,000 yen

NBW-IL-3: (Interlining) Experimental model. Size of cells to be standardized to RNIB size. Price unknown.

NBW-IP-1: (Interpointing) Experimental model. Size of cells to be standardized to RNIB size. Price unknown.

Book-holder for Stereotyper. Metal and flexible in height 3500 yen

Name: Silk Screen Method of Braille Production
Source: AFB
Availability: Experimental prototype—1954 (discontinued)
This is the regular silk screen printing technique modified only by the plastic stencil being punched in braille to produce braille printing at far less cost than the present method of embossing. It has been found satisfactory on a wide weight range of paper including onionskin and heavy braille papers. However, very severe finger pressure is required to cut a plastic stencil on a braille punching machine of the type now available.

Name: Solid Dot Braille Printing
Source: RNIB
Availability: Commercial Total £35,685. 0. 0
Essentially the process consists of a web-faced machine in which the paper is passed between two cylinders each containing eight plastic stencils, the stencils having been perforated in the form of braille characters. Plastic ink is supplied to the inside surfaces of the cylinder and is forced through the stencils onto the paper. After brailling, the web is passed to a heating or curing chamber where the dots become firm and smooth. The web is then carried to a letter-press printing unit for title, date and folio number. Finally, the web is folded concertina-style into signatures of 16 pages and then cut off to length. The advantages claimed for this process are lower cost because of thinner, less expensive paper and automatic ink-printing and folding into signatures; decrease in bulk of a finished book or magazine because of the thinner paper; and a more desirable type of braille.

Individual machines making up solid dot installation

1. Piercing machine for plate location on transcribing machines
2. Transcribing machine for simultaneous stencil and proof production at approximately 1.6 stencils per hour
3. Stencil correcting machine
4. Stencil grooving and forming machines
5. Solid dot printing machine producing twenty-one 16 page sections per minute, excluding fume extraction
6. Müller combined stitching and trimming M/C

Additional equipment for producing books

1. Spine forming machine
2. Book sewing machine
3. Stencil cleaning equipment for stencil storage pending reprints.

SMALL SCALE BRAILLE DUPLICATION

Name: BETA—Braille Electronic Translator, Automatic
Source: David Milne, San Diego, California
Availability: Experimental prototype—1961
A portable typewriter, small computer, and braillewriter have been connected. There

are some contractions but not all that are in Grade 2 braille. However, it is better than Grade 1.

Name: Braille Duplicator
Source: David Kramer, Grover Cleveland High School, Queens, New York
Availability: Experimental prototype—1961
The device consists of modified Perkins braillers in which one Perkins braillewriter is used as the master and several others are interconnected to produce copies as the master is operated. There is no storage system.

Name: Braille Teletypewriter Attachment
Source: Union of Czechoslovakin Invalids: Committee on Devices for the Blind
Availability: Experimental prototype—1962
The present model of this code converter permits only the scanning of one braille letter at a time. This limitation will be removed by the perfection of an electrically controlled typewriter attachment with braille letters. With the provision of a typewriter to braille punched paper tape code to teletypewriter in this program, it will be possible also to consider the feasibility of an automatic production of small copies of braille text.

Name: Braille Typewriting Machine
Source: Maurice Bocquit, France
Availability: Experimental prototype—1923
This device is a standard typewriter coupled electrically via electromagnetic solenoids to a standard braillewriter. It produces Grade 1 braille.

Name: Braille Typewriting Machine
Source: Erik Frey and Samuel A. Cooper, Chicago, Illinois
Availability: Experimental prototype—1954 (discontinued)
This device is a typewriter to braille converter via electromagnetic relay/punch, similar to that used by Nolan but with a later model typewriter.

Name: Braille Typewriting Machine
Source: Alfred G. F. Kurowski and Charles M. Lawrence, New York
Availability: Experimental prototype—1930 (discontinued)
This machine is a standard typewriter coupled electrically via electromagnetic solenoids to a standard braillewriter. It produces Grade 1 braille.

Name: Braille Typewriting Machine
Source: Edward J. Nolan, Chicago, Illinois
Availability: Experimental prototype—1890 (discontinued)
This machine is a typewriter to braille converter utilizing an electromagnetic relay/punch.

Name: DACL Unit
Source: D. Baumann, Dynamic Analysis and Control Laboratory, MIT, Cambridge, Massachusetts
Availability: Experimental prototype
This device consists of an electric typewriter, logic circuitry, and a specially designed high-speed electric braillewriter. The unit is designed to provide tactual readout. It can also be used to provide single copies of braille from the electric typewriter. Although the logic circuitry provides all braille symbols including contractions, the typist must know the rules for Grade 2 braille if this is to be produced.

Name: In-Vac Electric Typewriter
Source: In-Vac Corporation, Waltham, Massachusetts
Availability: Supplier, above
This device is a commercial version of part of the MIT braille duplicating system. It uses optical coding, dependent on the interruption of a light beam by opaque gates attached to the bottom of typewriter keys. When the keys are depressed, a specific pattern of light is passed to a photoreceptor. Specific patterns are included for each letter and symbol on the keyboard. The remainder of the system is dependent on the high speed flying shuttle designed and constructed at MIT.

Name: Diplograph
Source: Data not available
Availability: Experimental prototype—circ. 1880 (discontinued)
The device enabled a blind person to write simultaneously on two sheets of paper, in relief for the blind and in common type for the sighted. No other details are available.

Name: Electric Typewriter to Punched Paper Tape Output
Source: Arthur H. Buckley, Chicago, Illinois
Availability: Experimental prototype—1951 (discontinued)
This device is not specifically related to braille production but has a punched paper tape output similar to a Flexowriter.

Name: Electronic Decoding/Control Teletypewriter Device
Source: Hans-Joachim Thiel, Darmstadt, West Germany
Availability: Experimental prototype
This device has two parts. The first is a translator which translates the five-pulse code of the teletype system into the six-dot braille code and embosses it on a paper tape. (This part of the system offers possibilities as an electrical shorthand typewriter with the advantages of increase in writing speed and less manual energy.) The second part of the device is a normal tape puncher with a slightly modified punching unit. (This part of the system is commercially available.)

Name: Elettrobraille
Source: Federico Francesconi, Venice, Italy
Availability: Supplier, above
The Electro Braille System comprises an adapted typewriter, a code converter, and a brailler. The typewriter is an Everest; the code converter is manufactured by Francesconi, and the brailler used is the Picht made in Marburg. Its operation is similar to that of the Systematics Intercoupler (q.v.).

Name: Espinasse Braille Duplicator
Source: M. Espinasse, France
Availability: Experimental prototype—(discontinued) Approximate cost $250.00
This duplicator was designed to enable many braille copies to be produced cheaply and quickly while utilizing standard braille writing techniques. There is a master plate and a punch plate which each have 3200 holes. The punch plate is fitted with small punches in each hole; it is fitted over the master plate and the braille is written with a frame just as in ordinary writing. An awl pushes the small rods in those cell holes forming the letters into the master plate. The master plate is placed on a flat bed; a pressure roller is drawn over the master plate and the paper on which the embossing is to be done, and when lifted off, the paper contains an excellent grade of braille.

Name: Nakamura Interlining Braille Writer-SA-2
Source: Lighthouse, Welfare Center for the Blind
Availability: Nakamura Braille Manufacturing Co. 30,000 yen
Thirty-two cells, 17 lines (both sides), 24 lines (one side), includes wooden case. Attached lever aids in speedy change of lines.

Name: Marburg Braille Duplicator
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 645,00 DM
One person can prepare both sides of the master plate of this flat-bed press in about one hour. The paper is then laid down, the top of the press lowered, and a handle cranked forcing the top plate roller onto the master plate. This duplicator can also be used for double-sized interpoint print.

Name: Small Scale Braille Duplicator
Source: John Haynes, Stanford Research Institute, Menlo Park, California
Availability: Experimental prototype
This device uses the Flexowriter to originate the punched tape that is later used to control a modified brailler in much the same fashion as the Systematics Intercoupler (q.v.).

Name: Small Scale Braille Duplicating Machine
Source: R. Keith Lennon, New South Wales, Australia
Availability: Experimental prototype—1960
This system comprises a design which parallels several similar systems for the small scale duplication of braille texts. Like the Systematics Intercoupler and other braillewriter-operated input systems, it comprises a braillewriter to whose keyboard a relaying system is attached which enables a six-hole code to be punched into standard teletypesetter tape.

Name: Small Scale Braille Duplicator
Source: Richard Woodcock, Colorado State College, Greeley, Colorado
Availability: Experimental prototype
This system has been devised with a choice of a braillewriter keyboard or an alphanumeric keyboard as the input, and using an electrically controlled braillewriter as the output. Punched tape is used for control and storage.

Name: Ste-Re System
Source: William H. Stevenson III, Winston-Salem, North Carolina
Availability: Experimental prototype
Ste-Re consists of four components: the control panel, the encoding unit (the writing machine), the decoding unit (the reading machine), and the tactile nerve response unit, i.e., solenoid-operated stimulator pins (six in number). The control panel consists of five buttons and a treadle bar. By using any one or combination of these buttons, 63 codes for 63 characters can be created. The control panel commands the encoding component. The purpose of the encoder is to receive commands from the control panel in terms of numbers between 1 and 63; thus, "e" is coded by buttons 2, 4, 8, and 32. Each operation of the push button is recorded on a memory disc which is simply a record. These records may vary in quality from light plastic used for dictating machines to finer quality. The inexpensive disc is used for records, correspondence, school work, etc., that would not require longer lasting records. The memory disc is placed in the decoder for reading.

Name: Systematics Intercoupler
Source: Dr. Francis K. Ballaine, Adelphi College, New York
Availability: Experimental prototype—1960. Once estimated at $2000 produced in quantity.
The device consists of four units: a modified Perkins Brailler, tape punch, tape reader, and a power supply. The braillewriter has been modified by the addition of contacts for the control of the tape punch, solenoids to operate the keys, and a motor drive to provide power carriage return. These units are connected through switches so that an operator making a braille copy on the writer automatically records the information on punched paper tape. Additional copies are made by feeding the tape through the tape reader, which in turn controls the braillewriter.

Name: Teleprint Tape Transcriber
Source: St. Dunstan's, London, England
Availability: Supplier, above
A standard tape reader has been adapted to give an embossed code on a modified braille shorthand machine.

Name: Teletypesetter Punched Tape-To-Braille Translator
Source: Sidney Friedrich, Polytechnic Institute of Brooklyn, New York
Availability: Experimental prototype
This device is a switching system designed to make available to the blind more reading material through the conversion to Grade 1 braille of punched teletypsetter tapes obtained from the printing industry. These expendable tapes, used during the publication process, contain all the information finally placed on the printed page. Use is made of the principles of switching algebra and their extension to the synthesis of combinational and sequential circuits. To simplify the task of designing the translator combinational circuitry, three-dimensional Karnaugh maps are used.

Name: The Thermoform 55 Vacuum Forming Machine
Source: American Thermoform
Availability: Supplier, above $450.00
It is compact, being approximately 14 inches by 18 inches by 14 inches high, and operates on standard 115v household current. An operator can produce 150 copies or more in an hour if desired.
Braille copies are produced by placing the master on the machine, raised impression side up. A sheet of plastic film is placed over the original and locked in place by closing the clamping frame. The heating oven is pulled into position over the frame and in approximately two seconds the vacuum is applied. The heating cycle and vacuum control are both automatic.

Name: Uformite Process
Source: J. M. Beck, Philadelphia/Rohm & Haas, New York
Availability: Commercial
A refinement of the Guerin process. In both the master braille sheet is coated on the embossed side with shellac. However, the reverse side is coated with a thin film of urea formaldehyde resin instead of the relatively thick plaster of the Guerin Process. A wringer press may be used but a flat-bed press produces better braille.

BRAILLE DUPLICATION ACCESSORIES

Name: Machine for Correcting Embossed Metal Plates
Source: Clovernook Printing House for the Blind, Cincinnati, Ohio
Availability: Production prototype
No details are available.

Name: Metal Book-holder
Source: Lighthouse, Welfare Center for the Blind
Availability: Kobayashi Iron Factory 3000 yen

Name: Paper-folder
Source: Lighthouse, Welfare Center for the Blind
Availability: Kobayashi Iron Factory 28,000 yen

Name: Typewriter to Braille Paper Tape Converter
Source: William Knatt and John Williams
Availability: Experimental prototype—1962
This device was designed to convert typewriter print to braille paper tape utilizing Sylvania diodes and a Banks braillewriter.

Name: Wooden Board for Folding Paper
Source: Lighthouse, Welfare Center for the Blind
Availability: Kobayashi Iron Factory 2800 yen

Name: Zinc plate
Source: Lighthouse, Welfare Center for the Blind
Availability: Nishiumi Sho-ten
One sheet of zinc plate is cut into 20 pieces of paper size plate. Cutting cost is 200 yen for one sheet.

No. 5: 0.23 mm thick	820 yen
No. 6: 0.27 mm thick	970 yen
No. 7: 0.31 mm thick	1020 yen

EDUCATIONAL

GEOGRAPHICAL

Atlases and Globes

Name: Atlas
Source: Lighthouse, Welfare Center for the Blind
Availability: Relief Map Manufacturing Co., Ltd. 350 yen
Contains maps of the world.

Name: Floor Pedestal Globe
Source: APH
Availability: Supplier, above $225.00
Of hollow plastic construction, 30″ in diameter and an over-all height of 51″, the globe is mounted on a sturdy metal base which provides for easy revolving. Additional features include raised longitude and latitude lines showing the Equator, Arctic and Antarctic Circles, and the Tropics of Cancer and Capricorn. The entire surface is lacquered in contrasting colors.

Name: French Relief Globe
Source: AFB
Availability: Discontinued in catalog listing
A 24-inch plastic globe mounted on a base which holds it at the correct angle and

permits it to be rotated. All land masses are raised above water surfaces which are ridged. Mountains are shown in elevation and principal rivers appear as raised lines. Major cities are shown as dots. The globe does not bear braille markings and therefore is to be used in conjunction with brailled maps.

Name: Relief Globe
Source: Lighthouse, Welfare Center for the Blind
Availability: Relief Map Manufacturing Co., Ltd.
Specially devised for the use of blind children showing the continents, the equator, the tropics, and arctic circles.

A. 50 cm	30,000 yen
B. 37 cm	10,000 yen
C. 15 cm	250 yen

Name: Relief Globes
Source: RNIB
Availability: Supplier, above
These globes show the world in relief and indicate the following features: mountain ranges, rivers and lakes, seas and oceans, tropics and arctic circles, capital towns. All names are in letterpress only and are primarily intended for use in schools.

Cat. No. 9249: 12″ in diameter	£23. 0. 0
Cat. No. 9250: 24″ in diameter	£69. 0. 0

Name: Table Model Globes
Source: APH
Availability: Supplier, above
Panoramic Model Globe: This globe is of lightweight, hollow plastic construction, 12″ in diameter, with separate aluminum cup-shaped base. It has full relief, plus raised latitude and longitude lines with an indented line for the Equator and is painted in contrasting colors. Elevations are exaggerated 32 to 1 in comparison with the horizontal distances. $11.50
Geo-Physical Model Globe: This globe is of lightweight, hollow plastic construction, 12″ in diameter, with separate metal tripod base. It has full relief, plus raised longitude and latitude lines with an indented line for the Equator and is painted in contrasting colors. Elevations are exaggerated 50 to 1 in comparison with the horizontal distances. $14.50

Maps—(Alphabetical by Supplier)

Name: Embossed Maps of the World
Source: AFB
Availability: Supplier, above Cat. No. GES63: $11.00
Set comprises 14 maps, each measuring 16″ x 19½″. Europe, North America (including Central America), South America, Asia, and Africa are represented by two maps each, one topographical and the other political. Remaining maps combine both features for Middle and Far East, Indonesia, and Australia. Of plastic, washable material. Marked with braille symbols which correspond with braille key.

Name: Plastic Puzzle Map
Source: AFB
Availability: Supplier, above Cat. No. GEC62: $3.60
Map of United States, cut along state lines, measuring 12″ by 19″. Designed as a game for sighted people, it has been found useful as an aid in geography.

Name: Desk Maps of the United States
Source: APH
Availability: Supplier, above
Plastic, Undissected Relief map (20½" x 15¾") with full relief and with elevations exaggerated 20 to 1 in comparison with horizontal distances.

White	$2.50
Painted in contrasting colors	$3.50

Plastic Undissected map (21½" x 15½") without relief shows the major rivers and water bodies in the continental United States, plus the addition of dotted lines outlining territorial expansion of the United States from 1783 to 1853.

White only	$2.50

Large Type Outline map (20½" x 13¾") showing only border of the United States and individual states.

Packages of 10	$.80

Name: Dissected Easel-Type Maps of the United States
Source: APH
Availability: Supplier, above
Large, Dissected Relief map (approximately 28" x 48") molded from rigid plastic and dissected so that individual states can be lifted out. Each state is lacquered in a different color. Main rivers, lakes and oceans, also colored are depressed from land areas. Capital and large cities are indicated by different sizes and shapes of nailheads. Elevations are exaggerated 30 times in comparison to horizontal areas. $280.00

Small, Dissected Relief Map (approximately 19¼" x 31¼") molded from semi-rigid rubber for desk use and dissected so that individual states can be lifted out. Each state is lacquered in a different color. Main rivers, lakes and oceans, also colored are depressed from land masses. Capital and large cities are indicated by different sizes and shapes of nailheads. Elevations are exaggerated 22.5 times in comparison to horizontal areas. Longitude and latitude lines are depressed on the ocean areas and their positions west from Greenwich and north from the Equator are given in braille. $135.60

Name: Dissected Wooden Flat Puzzle Maps
Source: APH
Availability: Supplier, above
These maps show no relief and are in solid colors. They are suggested for use as puzzle maps for recreation and general use.

Africa (38" x 47")	$155.00
Asia (42" x 47")	$180.00
Europe (38" x 47")	$180.00
North America (38" x 47")	$155.00
South America (38" x 51")	$155.00
United States (30" x 48")	$155.00

Name: Dissected Wooden Relief Maps
Source: APH
Availability: Supplier, above
States and countries are enameled in various colors and individual states or countries can be lifted out. Water bodies are depressed from land areas. Large cities and capitals are indicated by different kinds of nailheads. Elevations are exaggerated 30% in comparison to horizontal areas.

Africa (38" x 47")	$330.00
Asia (42" x 47")	$330.00
Australia & Phillippines (37½" x 37½")	$240.00
Europe (36" x 42")	$270.00

North America (38″ x 47″) $330.00
South America (38″ x 51″) $270.00

Name: Special Wooden Dissected State Maps
Source: APH
Availability: Supplier, above
Further information from supplier.

Name: Easels
Source: APH
Availability: Supplier, above $25.00
These devices are designed to hold the respective dissected maps in an upright position.

Name: Plaques
Source: APH
Availability: Supplier, above $5.75
Desk-size plaques (thin plastic film reproductions of large floor globe) of the seven major global areas, including North America, South Amrica, Europe, Africa, Asia, Australia and the East Indies, and the North Arctic regions.

Name: Plaque or Globe Label Kits
Source: APH
Availability: Supplier, above per kit $.50
A kit of 7 braille labels, made of clear plastic backed with gummed tape for temporary pasting to either globe or plaques. The labels identify the ocean areas.

Name: Marburg Topologically Embossed Maps
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
Embossed maps with inkprint indications are available for the following areas:

North Sea coastline	6,00 DM
East Sea coastline	6,00 DM
Rhineland and middle German mountain ranges	6,00 DM
Bohemian basin and border regions	6,00 DM
Southern Germany	6,00 DM
Marburg/Lahn environs	8,00 DM
City of Marburg/Lahn	5,00 DM
Switzerland	6,00 DM
France	5,00 DM
Netherlands, Belgium, Luxembourg	3,50 DM
Great Britain and Ireland	5,00 DM
Scandinavia and Finland	5,00 DM
Mediterranean Sea	6,00 DM
Africa	6,00 DM
North America	6,00 DM
Central America and West Indies	6,00 DM
South America	6,00 DM
Near East	6,00 DM
East Asia and Australia	6,00 DM

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $3.00
Africa (one volume). Contains the following units: The World (Eastern Hemisphere), Africa Physical, Africa Political, Africa General, Northeastern Africa, Northwestern Africa, Central Africa, Southern Africa.

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $3.00
The Americas (one volume). Contains the following units: The World (Western Hemisphere), North America, U. S. Physical, U. S. Political, U. S. General, Canada, Mexico, Central America, South America Physical, South America Political, South America General, Northern South America, Southern South America.

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $3.00
Asia (one volume). Contains the following units: The World (Eastern Hemisphere), Asia Physical, Asia Political, Union of Soviet Socialist Republics in Eurasia, Turkey, The Near East, Israel, etc., Iran, Afghanistan and West Pakistan, India, East Pakistan, Burma, etc., Thailand, Vietnam, etc., China, Japan and Korea.

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $2.50
Australia and Pacific Island Groups (one volume). Contains the following units: The World (Eastern Hemisphere), Australia, New Zealand, East Indies, Philippines, etc., Indonesia, Philippines, etc., Oceania.

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $3.00
Europe (one volume). Contains the following units: The World (Eastern Hemisphere), Europe Physical, Europe Political, Europe General, British Isles, France, Spain, etc., Germany, etc., Italy, etc., Union of Soviet Socialist Republics.

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Illinois: 12 units available only in one volume $3.00
U. S. Highways in Illinois (separate unit) $ .50

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Separate units not included in United States volumes, each with added plate of U. S. highways:
Iowa $.50
Missouri $.50
Wisconsin $.50

Name: Braille Maps
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Available in either ring-bound volumes or separate map units. A map unit consists of one or two map pages with attached explanatory key pages, wire stitched, one-side braille, 13 x 17.
Per unit, mailed separately $ .50
The United States (in two volumes) $5.00
Contains the following units: The World (Western Hemisphere), North America, U. S. Physical, U. S. Political, U. S. General (combined physical and political),

Northeastern States, Massachusetts, etc., Delaware, etc., Greater New York, North Central States, Southern States, Western States, Alaska, Hawaii, West Indies

Name: Typographical Signs
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $.50
Shows in enlarged relief with braille explanations the more usual inkprint symbols for value and measurement, one-side braille, pamphlet, 8 x 10½.

Name: Relief Maps and Diagrams
Source: Institute of Defectology
Availability: For schools for the blind
A number of relief maps and diagrams are made for student use, of geographical areas and of electrical circuits (the latter are often combined with actual "bread-boarded" circuit elements). The maps and/or diagrams are sometimes equipped with a simple electrical probe used to trace a desired course, contour, or outline on the embossed material. The output signal is then of the audible type, usually heard from a loudspeaker placed close by.

Name: Maps
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $.20 each
Size—22″ x 28″. Boundaries of 1938.

A 1 The World on Mercator's Projection.
A 2 The Western Hemisphere on Mercator's Projection.
A 3 Outline Map of North America.
A 4 Physical Map of North America.
A 5 Political Map of North America.
A 6 Outline Map of the United States.
A 7 The United States showing state boundaries.
A 8 Physical Map of the United States.
A 9 Political Map of the United States.
A 10 Northeastern United States.
A 11 Southeastern United States.
A 12 Western United States.
A 13 Alabama.
A 14 Arizona.
A 15 Arkansas.
A 16 California.
A 17 Colorado.
A 18 Connecticut.
A 19 Delaware.
A 20 Florida.
A 21 Georgia.
A 22 Idaho.
A 23 Illinois.
A 24 Indiana.
A 25 Iowa.
A 26 Kansas.
A 27 Kentucky.
A 28 Louisiana.
A 29 Maine.
A 30 Maryland.
A 31 Physical Map of Massachusetts.
A 32 Political Map of Massachusetts.
A 33 Michigan.
A 34 Minnesota.
A 35 Mississippi.
A 36 Missouri.
A 37 Montana.
A 38 Nebraska.
A 39 Nevada.
A 40 New Hampshire.
A 41 New Jersey.
A 42 New Mexico.
A 43 Physical Map of New York.
A 44 Political Map of New York.
A 45 North Carolina.
A 46 North Dakota.
A 47 Ohio.
A 48 Oklahoma.
A 49 Oregon
A 50 Pennsylvania.

B 51 Rhode Island.
B 52 South Carolina.
B 53 South Dakota.
B 54 Tennessee.
B 55 Texas.
B 56 Utah.
B 57 Vermont.
B 58 Virginia.

B 59 Washington.
B 60 West Virginia.
B 61 Wisconsin.
B 62 Wyoming.
B 63 Outline Map of Alaska.
B 64 General Map of Alaska.
B 65 Panama Canal Zone.
B 66 Outline Map of Philippine Islands showing numerous islands and the capital city.
B 67 General Map of the Philippine Islands.
B 68 Outline Map of Hawaiian Islands, showing the capital city.
B 69 General Map of Hawaiian Islands.
B 70 Porto Rico.
B 71 Outline Map of Canada and Newfoundland.
B 72 Physical Map of Canada and Newfoundland.
B 73 Political Map of Canada and Newfoundland.
B 74 Outline Map of Newfoundland and Labrador.
B 75 Physical Map of Newfoundland and Labrador.
B 76 Political Map of Newfoundland and Labrador.
B 77 Alberta and British Columbia.
B 78 Manitoba and Saskatchewan.
B 79 Maritime Provinces of Canada.
B 80 Northwestern Territory of Canada.
B 81 Ontario.
B 82 Quebec.
B 83 Yukon Territory.
B 84 Arctic Regions.
B 85 Greenland.
B 86 Outline Map of Mexico.
B 87 Physical Map of Mexico.
B 88 Political Map of Mexico.
B 89 Political Divisions of Mexico.
B 90 Outline Map of Central America north of Panama.
B 91 Physical Map of Central America north of Panama.
B 92 Political Map of Central America north of Panama.
B 93 Outline Map of Panama.
B 94 Physical Map of Panama.
B 95 Political Map of Panama.
B 96 West Indies.
B 97 Cuba.
B 98 Outline Map of South America.
B 99 Physical Map of South America.
B 100 Political Map of South America.
C 101 Outline Map of Venezuela and the Guianas.
C 102 Physical Map of Venezuela and the Guianas.
C 103 Political Map of Venezuela and the Guianas
C 104 Outline Map of Colombia and Ecuador.
C 105 Physical Map of Colombia and Ecuador.
C 106 Political Map of Colombia and Ecuador.
C 107 Outline Map of Brazil.
C 108 Physical Map of Brazil.
C 109 Political Map of Brazil.
C 110 Outline Map of Peru, Bolivia and Paraguay.
C 111 Physical Map of Peru, Bolivia and Paraguay.
C 112 Political Map of Peru, Bolivia and Paraguay.
C 113 Outline Map of Chile, Argentina and Uraguay.
C 114 Physical Map of Chile, Argentina and Uraguay.
C 115 Political Map of Chile, Argentina and Uraguay.
C 116 Antarctic Regions.
C 117 The Eastern Hemisphere on Mercator's Projection.
C 118 Oceania.
C 119 Outline Map of Australia.
C 120 Physical Map of Australia.
C 121 Political Map of Australia.
C 122 New South Wales and Victoria.
C 123 Outline Map of New Zealand.
C 124 Physical Map of New Zealand.
C 125 Political Map of New Zealand.
C 126 Outline Map of Africa.
C 127 Physical Map of Africa.
C 128 Political Map of Africa.
C 129 Physical Map of Northwest Africa.
C 130 Political Map of Northwest Africa.
C 131 Physical Map of Northeast Africa.
C 132 Political Map of Northeast Africa.
C 133 Physical Map of Central Africa.
C 134 Political Map of Central Africa.
C 135 Physical Map of Southern Africa.
C 136 Political Map of Southern Africa.
C 137 Outline Map of Asia on Mercator's Projection.
C 138 Physical Map of Asia on Mercator's Projection.

C 139 Political Map of Asia on Mercator's Projection.
C 140 Outline Map of Japan.
C 141 Physical Map of Japan.
C 142 Political Map of Japan.
C 143 Outline Map of Japanese Empire.
C 144 Physical Map of Japanese Empire.
C 145 Political Map of Japanese Empire.
C 146 Outline Map of China with Manchukuo and Korea.
C 147 Physical Map of China with Manchukuo and Korea.
C 148 Political Map of China with Manchukuo and Korea.
C 149 Political Map of China.
C 150 China Proper.

D 151 Outline Map of Siam, French Indo-China, Malay States and East Indies.
D 152 General Map of Siam, French Indo-China, Malay States and East Indies.
D 153 Outline Map of India and Burma.
D 154 Physical Map of India and Burma.
D 155 Political Map of India and Burma.
D 156 Principal States of India.
D 157 Outline Map of Persia and Afghanistan.
D 158 Persia and Afghanistan.
D 159 Outline Map of Arabian Peninsula.
D 160 Physical Map of Arabian Peninsula.
D 161 Political Map of the Arabian Peninsula.
D 162 Outline Map of Turkey.
D 163 Physical Map of Turkey.
D 164 Political Map of Turkey.
D 165 Physical Map of Asiatic Russia.
D 166 Political Map of Union of Soviet Socialist Republics in Asia on Mercator's Projection.
D 167 Outline Map of Europe on Mercator's Projection.
D 168 Outline Map of Europe.
D 169 Physical Map of Europe.
D 170 Political Map of Europe.
D 171 Outline Map of British Isles.
D 172 Physical Map of British Isles.
D 173 Political Map of British Isles.
D 174 Outline Map of England and Wales.
D 175 Physical Map of England and Wales.
D 176 Political Map of England and Wales.
D 177 Counties of England and Wales.
D 178 Outline Map of Scotland.
D 179 Physical Map of Scotland.
D 180 Political Map of Scotland.
D 181 Counties of Scotland.
D 182 Outline Map of Ireland.
D 183 Physical Map of Ireland.
D 184 Political Map of Ireland.
D 185 Counties of Ireland.
D 186 Outline Map of Iceland.
D 187 General Map of Iceland.
D 188 Outline Map of Spain and Portugal.
D 189 Physical Map of Spain and Portugal.
D 190 Political Map of Spain and Portugal.
D 191 Map of Spanish Provinces and Portugal.
D 192 Outline Map of France.
D 193 Physical Map of France.
D 194 Political Map of France.
D 195 Departments of France.
D 196 Outline Map of Italy.
D 197 Physical Map of Italy.
D 198 Political Map of Italy.
D 199 Provinces of Italy.
D 200 Mediterranean Region.

E 201 Outline Map of Switzerland.
E 202 Physical Map of Switzerland.
E 203 Political Map of Switzerland.
E 204 Cantons of Switzerland.
E 205 Outline Map of Belgium, The Netherlands and Luxembourg.
E 206 Physical Map of Belgium, The Netherlands and Luxembourg.
E 207 Political Map of Belgium, The Netherlands and Luxembourg.
E 208 Subdivisions of Belgium, The Netherlands and Luxembourg.
E 209 Outline Map of Denmark.
E 210 Physical Map of Denmark.
E 211 Political Map of Denmark.
E 212 Subdivisions of Denmark.
E 213 Outline Map of Norway, Sweden and Finland.
E 214 Physical Map of Norway, Sweden and Finland.
E 215 Political Map of Norway, Sweden and Finland.

E 216 Outline Map of Germany and East Prussia.
E 217 Physical Map of Germany and East Prussia.
E 218 Political Map of Germany and East Prussia.
E 219 Subdivisions of Germany and East Prussia.
E 220 Outline Map of Estonia, Latvia and Lithuania.
E 221 Map of Estonia, Latvia and Lithuania.
E 222 Outline Map of Poland.
E 223 Physical Map of Poland.
E 224 Political Map of Poland.
E 225 Outline Map of Austria, Hungary and Czechoslovakia.
E 226 Physical Map of Austria, Hungary and Czechoslovakia.
E 227 Political Map of Austria, Hungary and Czechoslovakia.
E 228 Outline Map of Roumania, Bulgaria, Turkey in Europe, Yugoslavia and Albania.
E 229 Physical Map of Roumania, Bulgaria, Turkey in Europe, Yugoslavia and Albania.
E 230 Political Map of Roumania, Bulgaria, Turkey in Europe, Yugoslavia and Albania.
E 231 Outline Map of Greece.
E 232 Physical Map of Greece.
E 233 Political Map of Greece.
E 234 Outline Map of Soviet Russia on Mercator's Projection.
E 235 Outline Map of European Russia.
E 236 Physical Map of European Russia.
E 237 Political Map of European Russia.

Name: Maps
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $.20 each
Size 22″ x 28″. Historical maps.

E 238 Palestine as divided among the Twelve Tribes, showing tribal territories, rivers and cities.
E 239 Kingdom of David and Solomon, 1025-953 B.C., showing Jerusalem, the capital, cities and boundaries of Palestine.
E 240 Palestine under the Latter Kings 953-722 B.C., showing approximate territorial boundaries, rivers and cities.
E 241 Map of Palestine in the time of Christ, showing subdivisions, River Jordan, mountains and cities.
E 242 Journeys of Saint Paul, showing cities, and giving directions for four journeys.
E 243 Birthplace of Western Civilization, showing rivers, deserts and cities.
E 244 Babylonia and Egypt (2100 B.C.), Amor, part of Egyptian Empire under Thothmes III (about 1450 B.C.), Egyptian Empire under Rameses II (about 1300 B.C.), rivers, cataracts and cities.
E 245 Assyrian Empire 669-625 B.C., showing rivers and cities.
E 246 Mycenean Greece, showing area of Mycenean civilization, centers of highest civilization, places where remains have been found and rivers.
E 247 Ancient Greece 700-600 B.C., showing independent states, tribal territories and cities.
E 248 The Oriental Empires about 600 B.C., showing empires, countries, rivers and cities.
E 249 The Persian Empire about 550 B.C., showing Royal Highway, rivers and cities.
E 250 Greece and Phoenicia about 550 B.C., showing regional boundaries, Phoenician settlements, Greek settlements, rivers and cities.

F 251 Greece during the war with Persia, 550-479 B.C., showing neutral regions, states, cities and approximate extent of rebellious Ionian colonies.
F 252 Athenean Empire about 450 B.C., showing cities, allied and dependent states.

F 253 Greece in 431 B. C., showing Ionia, neutral states, allies of Athens, allies of Sparta and cities.
F 254 Empire of Alexander the Great, showing states, rivers and cities.
F 255 Ancient Italy, showing regions and cities.
F 256 Rome and Carthage, 218 B.C., showing regions, rivers and cities.
F 257 Gaul, showing regions, mountains and cities.
F 258 Roman Empire 44 B.C., showing countries, rivers, the capital and other cities.
F 259 Roman Empire in 117 A.D., showing countries, rivers, mountains, Roman Walls and cities.
F 260 The Roman Empire about 395 A.D., showing dioceses, rivers and cities.
F 261 Roman Britain about 410 A.D., showing chief Roman roads, Hadrian's Wall and cities.
F 262 Roman and Hunnic Empires about 450 A.D., showing territories, rivers, suggested site of Attila's palace and cities.
F 263 Europe in 486 A.D., showing kingdoms, empires, other territories, rivers and cities.
F 264 Europe at the death of Justinian 565, showing East Roman Empire, Teutonic Kingdom, Celtic Kingdom and cities.
F 265 Angles, Saxons and Jutes about 600 A.D., showing settlements, towns and rivers.
F 266 The Califate in 750, showing cities, countries, territories acquired up to the death of Mohammed, under first three Califs, and the Ommiad Califs, respectively.
F 267 Growth of Frankish Power 481-814, showing empire of Charlemagne, conquests of Clovis, conquests of Charlemagne and cities.
F 268 Europe and the Califate about 814 A.D., showing countries, empires, rivers and cities.
F 269 Charlemagne's Empire as divided at Verdun, 843, showing kingdoms, Pyrenees Mountains and cities.
F 270 Divisions of Charlemagne's Empire in 887, showing kingdoms, Pyrenees Mountains and cities.
F 272 England in 800 A.D., showing sectional divisions and cities.
F 273 British Isles in 886 A.D., showing principalities and cities.
F 274 Spain in 910 showing kingdoms, states and cities.
F 275 Central Europe about 980, showing empires, provinces and cities.
F 276 Europe about 1000 A.D., showing independent kingdoms, feudal holdings in France and cities.
F 277 France about 1035, showing Royal Fiefs and cities.
F 278 Spain in 1037, showing kingdoms, county and cities.
F 279 Italy about 1050, showing political divisions and cities.
F 280 Dominions of William the Conqueror about 1087 A.D., showing rivers and cities.
F 281 Dominions of the Danes 1016-1241, showing dominion boundaries and cities.
F 282 Europe about 1097, showing countries.
F 283 Asia Minor and Syria about 1140, showing countries, rivers and cities.
F 284 Spain in 1150, showing kingdoms, county and cities.
F 285 France from 1154 to 1184, showing political divisions, English possessions and cities.
F 286 Central Europe about 1180, showing countries, Pyrenees Mountains and cities.
F 287 Europe about 1190, showing countries.
F 288 The Mediterranean Lands after 1204, showing countries and cities.
F 289 Spain in 1212 to 1492, showing kingdoms and cities.
F 290 Development of Christianity to 1300, showing limits of Christianity, unchristianized territories and cities.

F 291 France in 1328 A.D., showing political divisions and cities.
F 292 Mongolian Empires in 1330 A.D., showing political divisions, cities and lakes.
F 293 The Byzantine Empire in 1265, showing countries, cities and rivers.
F 294 Europe from 1360 to 1400, showing countries and cities.
F 295 The Great Schism 1378 to 1417, showing religious divisions, countries, cities and rivers.
F 296 The Byzantine Empire and the Ottoman Turks in 1355, showing countries, cities and rivers.
F 297 Scotland about 1250, showing mountains, marches and towns.
F 298 The Swiss Confederation from 1291 to 1513, showing cantons, districts and lakes.
F 299 France 1453, showing political divisions and cities.
F 300 The Ottoman Empire 1451-1481, showing countries and cities.

G 301 Europe in 1490, showing countries and cities.
G 302 Map of Italy about 1494, showing political divisions and cities.
G 303 Empire of Charles V., about 1526, showing the various parts of the Holy Roman Empire.
G 304 The Conquest of Mexico 1519-1521, showing route of Cortez from Vera Cruz to Mexico, cities, rivers, volcanoes and Lake Texcoco.
G 305 Conquest of Peru 1531-1533, showing route of Pizzaro from Panama to Cuzco, rivers and cities.
G 306 Southeast Asia, 1498-1580, showing Portuguese and Spanish Possessions and cities.
G 307 Europe about 1560, showing the empire and its political divisions.
G 308 The Netherlands 1559-1609, showing Spanish Netherlands, United Netherlands, subdivisions and cities.
G 309 The Ottoman Empire 1481-1683, showing political divisions and cities.
G 310 Ireland 1550-1653, showing political divisions and cities.
G 311 Europe about 1648, showing countries.
G 312 Sweden 1524-1648, showing political divisions and cities.
G 313 British Isles in 17th Century, showing provinces, Civil War divisions, capital and other cities.
G 314 The Growth of Russia in Europe, 1300-1796, showing political divisions and cities.
G 315 Europe in 1714, showing The Empire and countries.
G 316 India in 1792, showing states and cities.
G 317 Europe about 1810, showing Napoleon's Empire and Dependencies, countries and cities.
G 318 Central Europe after 1815, showing German Confederation, states and cities.
G 319 The Ottoman Empire 1683-1913, showing states and cities.
G 321 Italy 1859-1870, showing political divisions and the capital city.
G 322 The German Empire 1871-1919, showing states, the capital, other cities and rivers.
G 323 European Possessions in Africa in 1884, showing English, French Portuguese possessions and cities.
G 324 Africa in 1910, showing political divisions and cities.
G 325 Australia and New Zealand 1788-1929 (Mercator's Projection), showing states, English possessions and cities.
G 326 Dominion of Canada 1867, showing provinces, territories, the capital and other cities.
G 327 Latin America 1795-1936, showing countries, northern limit of Mexico in 1828, approximate northern limits of Spanish dominions in 1795.
G 328 Europe in 1914, showing countries of pre-war Europe.
G 329 Peoples of Austria-Hungary 1914, showing racial settlements and cities.

G 330 Western European Front during the World War 1914-17, showing battle sites, limit of first German advance, approximate line of trench warfare and cities.
G 331 Western European Front during the World War 1917-18, showing battle sites, limit of German retirement, Hindenburg line, limit of final German advance, Armistice line and cities.
G 332 Explorations in North America 1513-1776, showing physical features and explorations of LaSalle, DeSoto and others.
G 333 British Colonies in North America 1763-1775, showing proclamations, rivers and lakes.
G 334 North America in 1750, showing English, Spanish and French possessions, cities, rivers and the Great Lakes.
G 335 The American Revolution, showing battle sites, forts, cities, rivers and lakes.
G 336 Territorial Expansion of United States since 1803, showing acquisition limits.
G 337 Development of the Eastern United States, showing frontiers, cities and Mississippi River.
G 338 Development of the Western U. S., showing forts, cities, trails and the Mississippi River.
G 339 Growth of the United States 1776-1819, showing states, territories, Washington, D. C., and rivers.
G 340 Growth of the United States 1819-1835, showing states, territories, and rivers.
G 341 Growth of the United States 1835-1855, showing states, territories, and rivers.
G 342 Growth of the United States since 1855, showing states and territories.
G 343 Political Map of the seat of the Civil War, showing battle sites, states of the Confederacy, slave-holding states of the Union, free states and Washington, D. C.
G 344 Physical Map of the seat of the Civil War, showing battle sites, Fort Sumter, Appalachian Mountains and rivers.
G 345 The Indians in the United States, showing locations of Indian tribes.

Name: Map of Asia
Source: Lighthouse, Welfare Center for the Blind
Availability: Relief Map Manufacturing Co., Ltd. 3500 yen
Shows frontiers, capital cities, railroads.

Name: Map of North and South America
Source: Lighthouse, Welfare Center for the Blind
Availability: Relief Map Manufacturing Co., Ltd. 3500 yen
Shows frontiers, capital cities, railroads.

Name: Map of the World
Source: Lighthouse, Welfare Center for the Blind
Availability: Relief Map Manufacturing Co., Ltd. 3500 yen
Shows coast lines, frontiers, capital cities.

Name: Geographical Map of Europe
Source: RNIB
Availability: Production prototype
Representation of geographical features by graduation of surface textures. Complementary physical and political maps of each region selected will be accompanied with a joint braille instructional guide.

Name: Relief Maps and Braille Guides
Source: RNIB
Availability: Supplier, above
These maps show the principal towns, rivers and mountain ranges. Details of the braille symbols used are given in the braille guides.

Cat. No. 9388: England and Wales	£0. 11. 6
Cat. No. 24082: Braille Guide to Cat. No. 9388	£0. 8. 0
Cat. No. 9251: Scotland—Rivers and Towns	£0. 15. 0
Cat. No. 9252: Scotland—Rivers and Mountains	£0. 15. 0
Cat. No. 23371: Braille Guide to Cat. Nos. 9251 and 9252	£0. 8. 0
Cat. No. 9253: London	£0. 14. 3

HANDICRAFTS

Name: Chair Caning Instructional Frame
Source: RNIB
Availability: Supplier, above — Cat. No. 9193: £1. 4. 9
A wooden board showing 8 different examples of patterns described in the braille book *Chair Caning* by A. G. Knock published by the Institute (Cat. No. 5929).

MATHEMATICAL

Name: APH Cubarithm or Arabic Numeral Arithmetic Type Slate and Kindergarten Peg Board
Source: APH
Availability: Supplier, above
The device consists of a plastic type frame with which can be used either plastic braille cubarithm cubes or 24-point plastic gothic numeral type (for arithmetical calculations), or square plastic pegs (as a kindergarten pegboard).

Frame	$2.00
Braille cubarithm cubes	$2.50
Arabic numerals	$2.50
Kindergarten pegs	$1.50

Name: Arithmetic and Algebra Frame (Taylor)
Source: RNIB, AFB, APH
Availability: Supplier, above
The surface of this plastic frame is divided into star shaped holes with eight angles, allowing the double ended metal type to be placed in different positions according to the system expained in the instruction book *How to Write Arithmetic and Algebra by Means of the Joint Type Method* (braille edition No. 12853, letterpress edition No. 726). Purchase of at least 1 lb of Arithmetic Type or ½ lb of Algebra Type is recommended with each board.

Cat. No. 9061: Small frame	£0. 8. 0
Cat. No. 9062: Large frame	£0. 13. 6
Cat. No. 9063: Algebra type per lb	£0. 9. 0
Cat. No. 9064: Arithmetic type per lb	£0. 9. 0

Name: Bonham Geometry Device
Source: RNIB
Availability: Supplier, above — Cat. No. 9454: £2. 14. 0
A wooden board designed to enable students to describe geometrical figures and to letter them upwards. Straight lines are produced by holding the paper over the

raised serrated line at the bottom edge of the board and drawing the scriber along. Circles and arcs are made by means of the circle bar. The lettering cell is situated at one corner.

Name: Boxwood Foot Rule
Source: RNIB
Availability: Supplier, above Cat. No. 9360: £0. 3. 6.
A simple aid for teaching blind children the rudiments of measurement. The top edge is marked with a notch at each inch and a similar notch at each quarter-inch on the bottom edge. Each inch is indicated by the appropriate braille symbol.

Name: Braille Mathematical Chart
Source: Sun Oil Company, Philadelphia, Pennsylvania
Availability: Supplier, above Price unknown
The multiplication and division chart is made up of a log grid superimposed diagonally upon a log log grid. The chart is intended as an educational tool, and it made up of solid vertical and horizontal lines having the same dimensions and diagonal lines having different distinguishing dimensions. The spacing between the lines is logarithmic with different sets of spacings for vertical, horizontal, and diagonal lines. The braille scales at the outside borders of the chart are read horizontally.

Name: Brannan Cubarithm Slate
Source: APH
Availability: Supplier, above
The device consists of a square, plastic type frame and a set of cubes (100 pieces). The main purpose is to aid in the teaching and working of problems in long division, multiplication of large numbers, subtraction and addition.

Frame	$1.50
Cubes	$2.00

Name: Calculaid
Source: Dr. Andrew F. Schott, University of Wisconsin
Availability: Production prototype 1961
The Calculaid consists of wheels rigidly fixed in a yoke but which can be rotated. The braille symbols for numbers 0 through 9 are embossed on the wheel faces. There is a stop so that the wheel cannot be rotated backward beyond 0 nor forward beyond 9. The Calculaid has ten rows of wheels in five columns. At the left is a wheel containing the addition, subtraction, and multiplication signs. In the square area above the Calculaid, there is a frame to hold a Numberaid, or abacus of special design, used for teaching the operations with numbers.

Name: Combined Graph and Mathematical Demonstration Board
Source: RNIB
Availability: Supplier, above
To assist blind students in the preparation of graphs and the study of geometry. Graphs and geometrical figures are formed on plastic sheets by inserting headed pins in the required positions and joining them by means of rubber or spring steel bands. Embossed plastic sheets are available separately.

Cat. No. 9391: Board	£1. 2. 0
Cat. No. 9391A: Plastic Sheets (per dozen)	£0. 7. 0

Name: Compass "Best" Instructional
Source: RNIB
Availability: Supplier, above Cat. No. 9338: £0. 13. 6
An aid for learning the points of the compass. A circular aluminum plate mounted on a wooden base and embossed with 16 raised lines radiating from the center. Sixteen small plates each brailled with a different compass direction are provided.

Name: French Cubarithm Slate
Source: AFB
Availability: Supplier, above
The device is similar to the slates with braille symbols on five faces but this set of cubes has a raised line on the sixth face. Dot 1 is offset so that the surface can provide three arbitrary signs. Dots 1-2 are also offset to provide two more arbitrary symbols. With appropriate positions, the raised line will provide four more arbitrary symbols.

Cat. No. MAS99: Cubarithm Slate	$4.25
Cat. No. MAS100: Box of 100 cubes	$1.90

Name: Geometric Models
Source: Technische Hogeschool
Availability: Experimental prototype
These devices consist of flexible joints and wooden sticks which can be broken to any desired length to present three dimensional geometric structures and their inherent relations to one another. All figures studied in high school geometry can be constructed.

Name: Graphic Aid for Mathematics
Source: APH
Availability: Supplier, above $12.50
The device consists of a cork composition board, rubber mat embossed with vertical and horizontal lines, and a supply of pins, rubber bands, and flat spring wires. With the use of this board any plane geometrical figure for the study of arithmetic, algebra, plane geometry, trigonometry, analytical geometry, and differential and integral calculus can be constructed. It can also be used to construct bar and circle graphs and as a game for younger children.

Name: The Hoff Aid
Source: APH
Availability: Supplier, above $22.50
The Hoff Aid is an upward-writing slate and is designed primarily for use in making mathematical calculations on paper. Its main advantage lies in the fact that it permits examination of the brailled characters at all times without having to remove the paper from the slate. It is not designed for taking notes and the like, since it does not permit the necessary speed in writing.

Name: IMOUT Game—Braille Edition
Source: APH
Availability: Supplier, above price not listed
This game was designed for drill in the recognition of fractions of equal value. There are 20 cards on which are 5 columns of fractions, five fractions to a column and each column headed with the letter of IMOUT. A box of cardboard squares overprinted with one of the letters of IMOUT and a fraction is supplied. Both the card and squares are printed in braille and large type. Each fraction has a hole in the center, the object being to match the correct fraction and letter to the correct hole so that 5 pegs in a row are obtained.

Name: Kine Mltply Vizr
Source: APH, RNIB
Availability: Supplier, above $2.00
This device is designed for teaching multiplication tables, squares and cubes through No. 12. It is an 11″ x 11″ square made of thick cardboard. Mounted on this is a plastic wheel embossed with the numbers and fitted with fluted edges for manual

turning and a gear mechanism to place the wheel for reading. A sheet of heavy paper placed over the wheel has a V-shaped hole cut out so that the braille numbers can be read for any table as the wheel is turned.

Name: Mitchell Wire Forms with Matched Planes and Volumes
Source: APH
Availability: Supplier, above $35.00
The device consists of a set of geometric figures illustrating outline forms, planes and volumes commonly found in geometric problems. Since the respective figures in all three forms are made to the same scale, the wire frames will fit over planes and solids of the same shape.

Name: Multiplication Table
Source: RNIB
Availability: Supplier, above Cat. No. 9464: £0. 2. 3
An aluminum sheet mounted on thick board and embossed with 144 squares. Along the top and down the left side, the squares are numbered 1 to 12.

Name: Multiplication Tables (through the 12's)
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above per single copy mailed separately, $.25; per dozen, $.80

Name: Numberaid
Source: Dr. Andrew F. Schott, University of Wisconsin
Availability: Production prototype
This abacus has 5 rods with 9 counters below and 2 counters above the stop bar. There is a spring inserted inside each counter which keeps the counter in the position placed even if the Numberaid is upright.

Name: Texas Arithmetic Slate and Type
Source: APH
Availability: Supplier, above
The device consists of a rectangular wooden type frame and a set of 150 Philadelphia Great Primer inkprint lead type, comprising 15 sets of the digits from one to nine, and zero. The main purpose is to aid in teaching and working of problems of long division, multiplication of large numbers, subtraction and addition. In addition, the type itself can be used in teaching the shape of inkprint numerals to blind children.

Frame	$7.50
Type	$4.50

MEDICAL

Name: Anatomical Model of Human Body
Source: Lighthouse, Welfare Center for the Blind
Availability: Kyoto Scientific Specimen Co., Ltd. 135,000 yen
Broken up into 100 pieces.

Name: Anatomical Model of Human Heart
Source: Lighthouse, Welfare Center for the Blind
Availability: Kyoto Scientific Specimen Co., Ltd. 9500 yen

Name: Magnified Model of Human Brain
Source: Lighthouse, Welfare Center for the Blind
Availability: Kyoto Scientific Specimen Co., Ltd. 40,000 yen

Name: Magnified Model of Human Eye
Source: Lighthouse, Welfare Center for the Blind
Availability: Kyoto Scientific Specimen Co., Ltd. 9500 yen

Name: Model of the Human Circulatory System
Source: Lighthouse, Welfare Center for the Blind
Availability: Kyoto Scientific Specimen Co., Ltd. 15,000 yen

MUSIC

Name: Adapted Metronome
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 39,60 DM
This device has been designed to be attached to a metronome so that the metronome can be used by a blind person without the help of a sighted individual.

Name: Beetz Notation Graph
Source: APH
Availability: Supplier, above $75.00
Designed to teach the blind student conventional notation and afford the seeing student musical examples or practice in sight reading. It is a model of the inkprint grand staff mounted on a cloth-covered cork base set in a wooden frame. A set of 129 musical symbols is furnished. The device is well made although expensive. However, it seems a little small for its purpose and the firmness of the corkboard together with the fact that the symbols are made with two attaching pins makes for certain difficulty in attaching the symbols.

Name: Braille Music Chart
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $.50
Without reading exercises, one-side uncontracted braille, pamphlet, 7 x 10½.

Name: Franz Electric Metronome
Source: AFB
Availability: Supplier, above Cat. No. MUM107: $13.10
Case is black polished plastic 5″ wide, 4″ high and 3½″ deep. Scale has been adapted to be read tactually, and runs from 40 beats per minute on the right side to 208 beats on the left. Double raised dots have been placed at 60, 72, 120, and 144 beats per minute. Single raised dots at 96, 40, and 208 beats per minute.

Name: Key/Signature Teaching Aid
Source: V. Zuckerkandl/AFB
Availability: Experimental prototype
The device is in the form of a slide rule and shows primarily the relation of key to signature. It also spells out all major and relative minor scales, shows where the whole-tone and where the half-tone steps are in the diatonic sequence, and shows the so-called "circle of fifths" at all times.

Name: Magna Music Board
Source: Frank Distributing Company, New York
Availability: Discontinued
A device similar to the Beetz Notation Graph but employing magnetized symbols and a ferrous backboard.

Name: Metronome
Source: AFB
Availability: Discontinued in catalog listings
This Seth Thomas Maelzel metronome is spring-wound with a plastic scale bearing braille indications.

Name: Metronome Attachment
Source: RNIB
Availability: Supplier, above Cat. No. 9385: £0. 10. 0
A metal gauge for regulating the action of a metronome. Made to special order only.

Name: Musical Notation Frame Set
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 39,00 DM
The set consists of a frame, notes, staff indication, signatures, etc.

Name: Perfection Name-the-Tone Bars
Source: Walberg & Auge, 31 Mercantile Street, Worcester 8, Massachusetts
Availability: Supplier, above
The bars are enclosed in boxes of the same size which expose equal areas of each metal bar. Thus there is no visual or tactual indication of the pitch difference. Learning to arrange them in diatonic scale (or other) sequence develops the student's aural sensitivity and tonal memory.

Name: Primer of Braille Music
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $.75
1930 edition, with reading exercises, one-side uncontracted braille, pamphlet, 8 x 10½.

Name: Schirmer Music Notation Board
Source: G. Schirmer, New York
Availability: Supplier, above
A device similar to the Beetz Notation Graph but employing magnetized symbols and a ferrous backboard. It is provided with two staffs, however, it is not long enough to reproduce more than one measure of the simplest minuet.

Name: Tonometer Music Training Device
Source: Adela Bay, New York/AFB
Availability: Experimental prototype—1960
This device has the appearance of a slide rule with interchangeable cases. The ruler is printed on both sides with the chromatic scale including all enharmonics. The cases have variously spaced perforations in them corresponding to the tonal patterns of the various scales, triads and seventh chords. A case is slid over the ruler until a given tone appears through the first perforation. The remaining tones of the particular arrangement then appear in the other windows.

PEDAGOGICAL

Name: Clockface with Braille Notation
Source: APH
Availability: Supplier, above $2.50
The clock is designed for teaching children to read time and to learn the shape of inkprint numbers. It consists of a metal face with movable hands geared in the regular manner and the twelve numbers embossed in both braille and inkprint.

Name: Constructo Set No. 1
Source: APH
Availability: Supplier, above $42.00
The Wooden Constructo Set consists of various lengths of hard wood with holes bored at regular intervals and a quantity of wooden nuts and bolts similar to commercial erector sets. The purpose of this device is to give the blind child practice in manual dexterity and to train his creative abilities.

Name: Diagram Board
Source: RNIB
Availability: Supplier, above Cat. No. 9209: £1. 2. 6
Diagrams and outlines of "pictures" can be formed by placing rivets in the holes of the perforated zinc framework.

Name: Embossed Clock Dial
Source: RNIB
Availability: Supplier, above Cat. No. 9073: £0. 3. 6
An instructional device for teaching children to tell the time.

Name: Tactile Model of Hot Water Heating System
Source: Institute of Defectology
Availability: For schools for the blind
This model is a simple representation of a hot water heating system of domestic type. Water is heated in an electrically fed container and circulates upward into miniature radiators of domestic type, and back down again to the boiler-container. Students can trace the progress of heated water and/or steam upward into the radiators and the cooler water back down the return pipes to the boiler/container.

Name: Typewriter Keyboard Chart
Source: RNIB
Availability: Supplier, above Cat. No. 9428: £0. 4. 3
Made from plastic material and designed to enable blind persons with a knowledge of braille to learn the position of the keys on a standard typewriter keyboard.

Name: Union Jack "Best" Composition
Source: RNIB
Availability: Supplier, above Cat. No. 9335: £0. 2. 9
For illustrating to the blind the individual flags which comprise the Union Jack. The flags are in embossed outline on aluminum sheet mounted on thick strawboard.

Name: Union Jack "Best" Device
Source: RNIB
Availability: Supplier, above Cat. No. 9336: £0. 2. 6
The individual flags superimposed on each other to form the Union Jack.

READING

Name: Braillette Board and Pegs
Source: RNIB
Availability: Supplier, above
By inserting the round-headed metal pegs in the holes in the drilled baseboard, braille characters can be formed. When the lid is closed and the box turned over, the characters are shown as they are written when using a braille frame. Specially recommended for schools. Board is provided with 100 pegs.

Cat. No. 9068: Board and Pegs £0. 9. 0
Cat. No. 9068A: Extra pegs per lb £0. 2. 9

Name: De Braille Instructional Device
Source: RNIB
Availability: Supplier, above Cat. No. 9365: £0. 2. 6
For teaching braille. Three sections of wood fitted with studs rotate around a common axis. Any letter of the alphabet can be formed by turning the sections independently.

Name: Finger Stall for Braille Reading
Source: RNIB
Availability: Supplier, above Cat. No. 9443: £0. 0. 3
Made from very thin plastic and fitted with an elastic band which fits over the wrist. Of particular help to those learning to read braille.

Name: German Peg Board
Source: AFB
Availability: Discontinued in catalog listing
A beginner's training device of black bakelite with retractible metal pins providing 3 ten-cell lines. The pins are hollowed on the bottom and are raised with an oversized stylus. They can be erased with finger pressure. The device is supplied with a stylus.

Name: Spelling Frame with Words
Source: APH
Availability: Supplier, above
This device consists of a slotted metal frame and a set of individual brailled words mounted on cardboard. The set of words comprises the same set of 158 words used for the "Basic Reading Series" preprimers. The purpose of this device is to aid in teaching spelling, easy recognition of words, and sentence building.

Frame	$1.00
Set of Unit Words	$1.00

SCIENTIFIC

Name: Atomic and Molecular Models
Source: Technische Hogeschool
Availability: Experimental prototype
These three dimensional models will provide the student with an appreciation of valence and other properties of various atoms, and enable him to construct atoms and molecules from their simpler parts.

Name: Gold Leaf Electroscope
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
A standard gold leaf electroscope for demonstrating electrostatic charge deflection has been adapted for use by the blind by providing a battery powered light source similar to a common flashlight and, on the opposite side of the transparent container within which the gold leaf is suspended, a common selenium photovoltiac cell used as the transducer and incorporated into a transistorized photo-relay with a buzzer which serves to give an audible signal when the gold leaf is deflected.

Name: Instrument Reading "Microtact"
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
A feature common to many of the science instruction devices used with the blind is a feeler or probe by means of which the blind student is enabled to make observations in parts of apparatus not accessible to fingers. In practice it takes the form of a wire

or thin rod which can be inserted into a narrow tube for measuring the heights of liquid levels wherein an audible signal is given when contact with the liquid is made. The probe is also used in devices to enable blind students to read accurately the position of pointers on instrument scales. In this application a delicate feeler wire is provided together with sensitive electrical relays to give a signal when contact is made between the feeler and the instrument pointer. Engraved scales with quite close graduations too fine to be read by the fingers can also be provided with the Microtact. Microtacts can incorporate a variety of transducers including piezo-electric crystals, strain gauges, sensitive relays, amplifiers, etc.
Among other apparatus incorporating the Microtact we can include a mercury thermometer, a spring balance for rapid weighing, a microammeter with internal probe, an apparatus for demonstrating Pascal's law of fluid pressures, Hare's apparatus with probes for measuring liquid levels, device for measuring volumes of liquids in measuring cylinders, apparatus for demonstrating the minimum volume of water, an apparatus demonstrating the electrolysis of water into its component gasses, a millimeter gauge, and a simple thermoscope for radiant heat experiments.

Name: Instrument Reading
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
An electrical bell or buzzer has been incorporated in simple series circuits powered by a dry cell. A mercury thermometer and a spring balance have been so adapted for use in the laboratory.

Name: Optical Bench
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
An optical bench designed to permit the study of the laws of refraction and reflection of light in classes for blind students has been constructed by using a 20″ diameter wooden table set on 6″ high legs having a raised board on a diameter containing a transparent vessel with plane front and semicircular back. On the perimeter of one half of the hemisphere a brass rod with adjustable support holds a common flashlight. In the other hemisphere and in back of the semicircular back is an additional brass rod with adjustable support holding a photocell which is incorporated into a thyratron relay circuit with a buzzer for an audible output indication. The presence of a light ray is detected by the photoelectric cell.

Name: Optical Probe
Source: Institute of Defectology
Availability: In limited quantities for educational purposes
Several varieties of optical probes are made, all depending on the simple principle of light collected through a lens onto one or more photocells whose output acts as a triggering impulse for one or more forms of output to the human user, i.e., acoustic impulses (through loudspeakers or headphones) or tactile stimuli (protruding pins, etc.). Gradations in pitch of the audible output indicate varying levels of illumination of the field scanned by the probe. The variations in use of the probe are adaptations to permit reading the level of fluid in a tube, locating the position of a meter pointer, determining the direction of the path of a collated light ray, etc.

Name: Tactual Circuit Demonstrator
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
A complete radio receiver of the superheterodyne type is laid out on a large tabletop with all components readily accessible. Connectors of various types are provided for making circuit adjustments and measuring circuit parameters such as voltage, current,

resistance, gains, etc. A complete radiotelephone transmitter receiver has also been constructed as a breadboard unit with all circuit elements laid out in the same manner.

WRITING

Name: Alphabet Cards
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Much Enlarged Braille (.110 from dot to dot), 4 x 8½, without Roman letters:

Heavy paper cards, per dozen	$ .40
per 100	$2.50
Thin zinc card, per single card mailed separately	$ .40
per dozen	$3.00

Much Enlarged Braille with ½" embossed Roman letters, 5 x 8½:

Heavy paper cards, per dozen	$ .40
per 100	$2.50
Thin zinc card, per single card mailed separately	$ .40
per dozen	$3.00

Name: Alphabet Cards
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Giant Dot (¼" from dot to dot), 4 x 8½, without Roman letters:

Heavy paper cards, per dozen	$ .40
per 100	$2.50
Thin zinc card, per single card mailed separately	$ .40
per dozen	$3.00

Giant Dot with ½" embossed Roman letters, 5½ x 8½:

Heavy paper cards, per dozen	$ .40
per 100	$2.50
Thin zinc card, per single card mailed separately	$ .40
per dozen	$3.00

Name: Alphabet Cards with Numerals
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $.50

Name: Braille Alphabet Chart
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 0,30 DM
In inkprint and braille.

Name: Ruenzi Writing Plate
Source: Miss Adeline A. Ruenzi, Service Club for the Blind, Inc., 4312 Olive Street, St. Louis 8, Missouri
Availability: Supplier, above Price unknown
A vinyl plate which is designed to teach the blind script writing, contains all the capital and small letters of the alphabet as well as numbers. The capital letters are 1¼ inches high and the small letters in proportion, all embossed in high relief, approximately 1/16 of an inch, making the letters easy to distinguish by touch.

Name: Script Guide
Source: AFB
Availability: Supplier, above Cat. No. WS203: $4.35
This device is composed of a clip board which takes standard 8½" x 11" paper. Down the left edge of the board is a notched guide on which a carriage with a clicking device carries a ¾" slot, formed of two thin metal rods. The far end of the slot is fitted into a metal block, and another such block slides on the rods to serve as margin stop. The carriage rotates on the notched guide so that it can be raised to simplify insertion of the paper. Several sheets of paper can be installed at a time for removal as they are filled. Board will also accommodate envelopes, postcards, etc., and is used as the basis for a course in long-hand writing of ordinary script.

Name: Script Raised Alphabet
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $.20

Name: Square Hand Raised Alphabet
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $.20

Name: Writing Cards
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $.30 ($3.00 per dozen)
Grooved fiber, 8½ x 11.

HOUSEHOLD

CLOCKS—(ALPHABETICAL BY SUPPLIER)

Name: Alarm Attachment for Deaf-Blind
Source: AFB
Availability: Supplier, above Cat. No. GM37: $8.80
Either the Time-All Timer or the James Remind-O-Timer may be used as an alarm clock for the deaf-blind by means of a special buzzer which is plugged into the Timer and placed under the mattress. At the designated time, the buzzer is turned on and its vibrations are amplified by the bed springs, waking up the occupant of the bed.

Name: Baby Ben Alarm Clock
Source: AFB
Availability: Supplier, above Cat. No. CM25: $7.05
Marked with two raised dots at 12, 3, 6, and 9. Single raised dots at remaining hours. 3¾" high. Extremely quiet in operation.

Name: Big Ben Alarm Clock
Source: AFB
Availability: Supplier, above Cat. No. CM26: $7.10
Marked for touch reading the same as Baby Ben Clock; 5" high.

Name: Cyma Braille Dial Alarm Clock
Source: AFB
Availability: Supplier, above — Cat. No. CS233: $10.25
Eleven-Jewel Lever Movement—40 hours.

Name: Travel Alarm Clock-Gotham
Source: AFB
Availability: Supplier, above — Cat. No. CM28: $18.35
Seven-jewel, 8-day movement contained in a genuine pigskin covered case measuring 3¼″ x 3¾″ x 1″ and weighing about 8 ounces. Silver gray dial 2-3/16″ square, marked with three gold colored studs at 12, two at 3, 6, and 9; single studs at remaining hours. Alarm hand on same axis as hour and minute hands so alarm can be set by touch.

Name: Westclox Electric Alarm Clock
Source: AFB
Availability: Supplier, above — Cat. No. CM27: $8.55
(Sheraton Model) Black Roman numerals and sturdy black hour and minute hands. Alarm hand is thin and comes out far enough to be set with good accuracy. Sweep second hand (topmost of four hands) can be easily removed if not wanted. Double raised dots at 12, 3, 6, and 9. Single raised dots at remaining hours. Alarm is a pleasant sounding bell. Housed in blond-colored hardwood case, measuring 5½″ wide x 4¾″ high x 2¼″ thick. Weight 1 lb 5 oz.

Name: Clocks
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Radio-switch Alarm clock: Fabrikat Junghans	11,00 DM
Metal clock: hand wound with brailling	38,50 DM

Name: Alarm Clock
Source: RNIB
Availability: Supplier, above. Overseas customers should order direct from The Cyma Watch Company, La Chaux de Fonds, Switzerland
Cat. No. 9399 — Price not listed
Specially designed for the use of the blind, this clock has a high grade 11-jewel, 3-hour lever movement fitted into a brass case. The dial has two dots at the 3, 6, 9, and 12 positions and a single dot at the intervening hours. Swiss made.

Name: Alarm Clock
Source: RNIB
Availability: Supplier, above — Cat. No. 9444: £0. 16. 6
A standard alarm clock adapted for use of the blind. It has strengthened hands and the dial has the hour positions indicated by two raised dots at the 3, 6, 9, and 12 positions and single dots at the remaining hours.

Name: Travel Alarm Clock
Source: RNIB
Availability: Supplier, above. Overseas customers should order direct from Arthur Imhof, Ltd., La Chaux de Fonds, Switzerland
Cat. No. 9398: — Price not listed
This clock has an 8-day, 7-jewel lever movement and is fitted into a pigskin leather case. There are 3 raised dots at 12, 2 dots at 3, 6, 9, and a single dot at the other hour positions. Swiss made.

Name: Alarm Clocks
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

Alarm clock, round, easily set	11,50 DM
Travel alarm clock, gold-colored, framed, leather	30,00 DM

KITCHEN

Name: Bread Cutting Box
Source: RNIB
Availability: Supplier, above — Cat. No. 9442: £0. 10. 0
A device to help a blind person to cut into even slices a tin or similarly shaped loaf using an ordinary knife or bread saw.

Name: Canned Goods Market Kit
Source: AFB
Availability: Supplier, above
Transparent plastic labels, held on can by elastic bands with patented clips. Labels are brailled with slate. Kit contains 25 strips of plastic (100 labels), 25 bands, and perforating punch.

Cat. No. KS77: Kit	$1.80
Cat. No. KS78: Plastic Strips (pkg of 25)	$ .60
Cat. No. KS79: Elastic Fasteners (pkg of 10)	$ .40

Name: Egg Poaching Ring
Source: RNIB
Availability: Supplier, above — Cat. No. 9070: £0. 1. 6
An adaptation of the standard egg ring to enable blind persons to fry or poach eggs and to serve them.

Name: Liquid Dispenser
Source: RNIB
Availability: Supplier, above — Cat. No. 9290: £0. 2. 6
Specially designed to allow blind persons to measure a spoonful of liquid.

Name: Liquid-Level Indicator
Source: RNIB
Availability: Supplier, above — Cat. No. 9445: £0. 0. 9
A simple device to enable blind people to determine the amount of liquid being poured into a jug or similar container.

Name: Sunbeam Frypan
Source: AFB
Availability: Supplier, above
An electric skillet with protective feet for use at the table. Equipped with an automatic heat control which is removable, and turns in a clockwise direction to 420 degrees, with tactual temperature indications at 160, 200, 240, 280, 320, 360, and 400. There is a double mark at 320, a stop at 420, and a stop in the counter-clockwise position for "Off." Pan measures 10½" square with a 6½" handle, draws 1150 watts, and can be used on 110-120 volts ac only. Skillet is 1¾" deep and cover is 3¾" deep making the enclosed space 5½" high.

Cat. No. KM68: Sunbeam Frypan	$22.20
Cat. No. KM69: Removable Control	$ 6.70

Name: Tea Caddy and Measure
Source: RNIB
Availability: Supplier, above Cat. No. 9457: £0. 8. 0
A metal container constructed so that a half or full teaspoonful of tea is issued by moving a sliding knob. Capacity—half a pound.

Name: Tea/Coffee Kettle
Source: De Blindas Förening, Stockholm, Sweden
Availability: Supplier, above
This kettle has two tops and a dual spout. The first top is used to heat the water. When the water or other liquid is hot enough, it is replaced by another top which forms an air-tight seal with the kettle. When pouring, liquid issues from the larger of the tubes in the spout; the smaller tube permits air to replace liquid in the kettle. The liquid will continue to pour until it reaches the level at which the dual spout is held, i.e., until air is prevented from flowing back into the kettle to displace the liquid poured out.

Name: Teapot
Source: Technische Hogeschool
Availability: Production prototype
A teapot which automatically pours a measured cup of tea and then stops. After returning it to a horizontal position, it is ready to pour a second cup and so on.

Name: Thermometers (Stem)
Source: AFB
Availability: Supplier, above
Weston thermometers with 1¾″ dials with stems ⅛″ in diameter extending from the back. Except for the 0 to 220 degrees thermometer, which has a 5″ sharpened stem, all others have 8″ stems. Marked with raised dots every 10 degrees starting at 30 degrees, except oven or candy thermometer which is marked every 50 degrees.

Cat. No. THM122: 25 to 125 degrees	$10.00
Cat. No. THM123: 0 to 180 degrees	$10.10
Cat. No. THM124: 0 to 220 degrees	$10.20
Cat. No. THM125: 50 to 500 degrees	$ 9.95

NEEDLEWORK

Name: Knitting Clock
Source: RNIB
Availability: Supplier, above Cat. No. 9382: £0. 4. 0
A device to enable a blind knitter to keep a check on the number of rows. One side of the metal clock is marked to indicate numbers up to 24 and the other side numbers to 125 in multiples of 25. Along the top edge nicks are cut at every inch position.

Name: Needles
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above 12 to package: 0,70 DM
Needles with elastic eyes.

Name: Tape Measure
Source: AFB
Availability: Supplier, above Cat. No. SEM119: $.70
Five-foot cloth tape with buried wire strands to prevent stretching. Large inkprint markings, and paper staple indications for tactual reading. Entire length marked in inches, with first inch marked in quarters. One cross staple at one foot, two at two, and so on.

Name: Tape Measures
Source: RNIB
Availability: Supplier, above
Strong linen measures with cotton stitches to mark quarter, half and inch positions. A single bead is also sewn at each inch position. The 36-inch measure has two beads at every 6 inches. The 60-inch which is a dressmaker's measure, has two beads at every 9 inches and three beads in the yard position.

Cat. No. 9288: 36-inch £0. 2. 9
Cat. No. 9289: 60-inch £0. 4. 3

Name: Tape Measures
Source: RNIB
Availability: Supplier, above
Strong linen tape measures marked at every inch with a large metal eyelet and a smaller metal eyelet at every half-inch. Two large metal eyelets mark every 12 inches.

Cat. No. 9440: 36-inch £0. 4. 0
Cat. No. 9085: 60-inch £0. 6. 0

SCALES

Name: Bathroom Scale
Source: AFB
Availability: Supplier, above Cat. No. SCM108: $18.90
Airplane dial Health-O-Meter, with 300 lb capacity, 3½" dial. The dial is 100 lbs, full scale, and the pointer revolves 3 times for full weight. Raised dots occur at each 5 lbs. and double raised dots at each 10. Zero is at 6 o'clock position on the dial. The reading does not change with shifting of pressure on the platform. Dimensions are 11" x 16". Platform 8½" x 11" x 2½" high. Platform rubber-covered. Heavy cast body with hardened steel pivots and bearings. Zero adjustment knob above dial. White enamel.

Name: Household Scale
Source: AFB
Availability: Supplier, above Cat. No. SCM109: $7.50
A well-constructed platform scale, manufactured by Chatillon. The 6¾" dial has raised dots at each ¼ lb with double raised dots at each 1 lb, and triple raised dots at each 5 lbs. White enamel finish with green or red platform and trim. Total capacity 25 lbs. Platform measures 6" x 6". Over-all dimensions, 8" x 8½" x 9".

THERMOMETERS, HYGROMETERS, AND BAROMETERS

Name: Barometer
Source: AFB
Availability: Supplier, above Cat. No. THM121: $6.80
Swift & Anderson aneroid barometer with raised dots at every tenth-inch and double raised dots at each half-inch graduation. Triple raised dots at 30 (Fair). Adjustable for various altitudes. Magnetized pointer to record readings. Needle is very fragile, so care must be taken in handling this instrument. Brass-plated case, 5" in diameter.

Name: Barometer
Source: RNIB
Availability: Supplier, above Cat. No. 9294: £6. 8. 0
A standard aneroid barometer with an embossed plastic dial fitted over the ordinary dial. The hand is specially strengthened and a movable indicator on the rim enables

settings to be made. A ring and two collapsible feet allow the instrument to be hung on a wall or stood on a shelf. Finished black with chromium fittings.

Name: Thermometers
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Room thermometer	12,00 DM
Clinical thermometer	price not listed

Name: Thermometers
Source: RNIB
Availability: Supplier, above
These instruments are adaptations of the standard articles and are for measuring room temperatures only. A strong indicator needle is fitted and the embossed dial is marked in both arabic and braille characters.

Cat. No. 9304: Fahrenheit markings	£1. 4. 0
Cat. No. 9305: Centigrade markings	£1. 4. 0

Name: Thermometer (Indoor-Outdoor)
Source: AFB
Availability: Supplier, above — Cat. No. THM126: $2.65
Swift & Anderson dial thermometer with scale 4″ in diameter. Range: minus 60 to plus 120 degrees. Indicator is red disc with extending pointer. Large inkprint markings with raised dots every ten degrees and double raised dots at minus 30, 0, 30, 70, and 100 degrees. Mounts on wall bracket. Nickel-plated brass case.

Name: Hygrometer
Source: AFB
Availability: Supplier, above — Cat. No. THM127: $10.30
A Lufft hair type hygrometer (for measuring relative humidity) adapted for touch reading. Dial 4½″ in diameter with scale covering about 270 degrees of angular rotation. Raised dots appear at each 10% with two raised dots at 50%. Brass case, with flanges for wall mounting, measures 5⅞″ in diameter by 1½″ deep. Silvered dial with black inkprint numerals. Calibration set screw.

TIMERS

Name: James Remind-O-Timer
Source: AFB
Availability: Supplier, above — Cat. No. CM35: $31.10
Time switch to turn on and off light household appliances such as TV and radio sets, tape recorders, coffee makers, etc.; 48 pins around dial, each controlling 15 minutes of time. Appliance is plugged into socket on back of clock. Raised dots around inside of bezel: 2 at 12, 3, 6, and 9, and 1 at remaining hours. Single raised dots around outside of bezel above the pin at each hour interval. Case of walnut-finished wood measuring 7″ x 7″ x 3½″ thick. Dial 3½″ in diameter. Weight: 3 lbs. Operates on ac current only. No alarm on clock, but clock can be used with vibrator as an alarm for deaf-blind persons.

Name: Marktime Timers
Source: AFB
Availability: Supplier, above
All are mechanically operated. Those with 30-minute capacity are marked with single raised dots at each minute and double dots at each 5-minute interval. The 60-

minute or 60-second models have single raised dots at each 2½-minute interval, two raised dots at each 5-minute interval, and three raised dots at the 15-, 30-, and 45-minute intervals. Switch models are used to disconnect any associated piece of electrical apparatus up to about 1200 watts.

Bell Ringing Models

Cat. No. CM29: 30-minute	$4.25
Cat. No. CM30: 60-minute	$4.25
Cat. No. CM31: 60-second	$4.25

Switch Models

Cat. No. CM32: 30-minute	$6.40
Cat. No. CM33: 60-minute	$6.40

Name: Ringer Timer
Source: RNIB
Availability: Supplier, above Cat. No. 9492: £0. 16. 0
A one-hour ringer in streamlined, plastic case for timing any operation where an audible reminder is required. Each 5-minute period is indicated on the embossed setting dial by two dots and the first quarter-hour is additionally marked to show the individual minutes. Fitted with rubber feet and also has a hanging bracket.

Name: Time-All Timer (Intermatic)
Source: AFB
Availability: Supplier, above Cat. No. CM34: $8.95
A 24-hour timer which turns an appliance on and off once a day. Not a clock since the dial rotates only once a day. Dial has raised dots at each hour, with double raised dots at 3, 6, and 9, and triple raised dots at 12. Dial is also notched at each half hour. Disk in center is smooth for AM hours and flocked, or fuzzy, for PM hours. Indicators on outside are used to turn equipment on or off as desired, or lever at side can be set to leave the plugged in appliance on permanent "on" or "off" for automatic operation. Housed in gray plastic case measuring 4½" x 4⅛" x 2¾". Weight: about 1½ lbs. Operates on 110-115 volts ac only and has a capacity of 875 watts.

Name: Time-All Timer (Intermatic)
Source: AFB
Availability: Supplier, above Cat. No. CM234 $8.95
Same as Catalog No. CM34 except for capacity—1875 watts, 125 volts ac only.

PERSONAL

CALENDARS

Name: Braille Calendar
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
4¼ x 5¾, 12 pages, interpoint:

1, 2 or 3 calendars, one mailing	$ .40
per dozen	$1.25
per 100	$8.00

Name: Pocket Braille Calendars
Source: AFB
Availability: Supplier, above Cat. No. MS207: Sent free of charge to individuals on receipt of self-addressed, stamped envelope.
On plastic measuring 3½" x 2¼". Number for each month, in two columns, followed by the initial of day on which first of the month falls. The "st" sign is used to distinguish Saturday from Sunday, and "th" sign to distinguish Thursday from Tuesday.

DEAF-BLIND COMMUNICATION

Name: Braille Deaf-Blind Communicator
Source: AFB
Availability: Experimental prototype—1953
Estimated quantity 200 estimated cost $50.00
This device has a keyboard similar to a braillewriter. The braille cell is included in the unit and the pins are operated mechanically. However, seven electrical contacts are provided for operating self-powered external apparatus through multiple plug connections.

Name: Braille Telephone
Source: Dr. Gerritt van der Mey, The Netherlands
Availability: Experimental prototype—1957
This Dutch machine is a long-distance communication for the deaf-blind. The sending device is a simple typewritter with electronic attachments that convert the letter symbols into sound. These sound patterns are transmitted to the receiver where they are reconverted into impulses that create braille impressions or characters at the receiving end.

Name: Conversation Boards for the Deaf-Blind
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Pocket Alphabet Card, embossed ½" Roman letters, 4½ x 6:

Heavy paper card, per dozen	$ .40
per 100	$2.50
Thin zinc card, per single card mailed separately	$ .40
per dozen	$3.00
Small Board, 5½ x 7½, with alphabet, numbers, and 20 much-used words (braille on transparent celluloid over printed chart, framed with metal backing)	$2.50
Speed-up board, 8½ x 11, with alphabet, numbers, and 99 much-used words (braille on transparent celluloid over printed chart, framed with metal backing)	$3.50

Name: Deaf-Blind Communication Sign Language Table
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 21,20 DM
The device is made of wood with metal overlay and measures 9 x 27 cm.

Name: Doorbell—for deaf-blind
Source: RNIB
Availability: Experimental prototype
The most promising method, consists of wiring the premises with an induction loop fed from a transmitter switched from a doorbell push, to generate within the habitable area a frequency induction field (of 40 kc/sec with a carrier wave modulated at 300-

400 cps). A small pocket receiver worn by the deaf-blind person feeds a miniature bone conductor transducer which, when placed in contact with a sensitive skin area, indicates the presence of a caller by mechanical vibration. The apparatus would be fully transistorized to render it lightweight.

Name: Gloves
Source: RNIB
Availability: Supplier, above Cat. No. 9076: £1. 10. 0
A method by which a sighted person with no knowledge of braille or the manual alphabet can converse with the deaf-blind. A blind, deaf, and dumb person can also talk to a sighted person by pointing out the letters of the message. When the gloves are put on, the whole of the alphabet and numerals are in view and by touching the required positions conversation can be facilitated. While the gloves can be marked by any sighted person, the Institute will undertake printing if good quality chamois gloves are provided.

Name: Marburg Deaf-Blind Communication Device
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
The device is furnished with six keys similar to a braillewriter. By pushing down the keys short pins are raised within a small area opposite the keyboard on the top of the case. These pins form the dots of the braille cell. The deaf-blind person puts a finger on this area while his partner "writes" what he has to say. The apparatus is small enough to be carried in the pocket.

Name: Renold-Arcaid Deaf-Blind Conversation Machine
Source: RNIB
Availability: Supplier, above
This machine is designed to enable sighted persons unacquainted with braille to converse with deaf-blind persons who have a knowledge of this system of embossed reading. This can be done in two ways: by embossing the braille characters on plastic film strip or by touch; i.e., the deaf-blind person reading direct from the styles. Each machine is issued with two spools of plastic film (16 mm cinematograph film) and further supplies may be ordered as required.

Cat. No. 9473: Machine	£51. 15. 0
Cat. No. 9473A: Plastic film, per 2 spools	£ 0. 1. 6

Name: Speaking Tube for Deaf-Blind
Source: AFB
Availability: Supplier, above Cat. No. MC228: $10.80
An ear trumpet which includes a simple plastic ear insert running into a tapered, flexible coil of wire covered with black textile braiding ending in a plastic mouth piece. The entire unit measures 38". Total weight is 6 ozs.

Name: Talking Disc
Source: RNIB
Availability: Supplier, above Cat. No. 9493: £0. 4. 0
A plastic device to enable sighted persons to talk to the deaf-blind and vice versa. The disc is embossed with braille and Moon characters and the ordinary letters are printed in black.

Name: Tellatouch
Source: AFB
Availability: Supplier, above Cat. No. MS229: $64.55
A device which provides a simple means of communication with a deaf-blind person who knows braille. It is 9" square and 2½" in height and weighs approximately 3½

lbs. Keys are arranged like those on a standard typewriter keyboard. This machine is shipped postpaid anywhere in the United States. On shipments outside the United States packing, postage and insurance will be additional.

Name: Tele-Communication by Touch
Source: Joseph Hirsch, Technion, Haifa, Israel
Availability: Experimental prototype—1961
This device relates to a system of communication (but not particularly to an apparatus) and a method for long-distance communication through the sense of touch. The sending station consists of a series of keys, actuated by the left hand of the sending operator, which cause oscillators, each corresponding to a key, to feed into a mixer circuit and transmitter. The receiving station consists of a receiver and a filter network allowing perception of the several transmitted frequencies, again each corresponding to one key. Information is received by the right hand of the listener or receiving operator.

Name: Touch-Speech Machine for the Deaf-Blind
Source: Budapest, Hungary
Availability: circ. 1920 (discontinued)
The operator of this machine communicates by using the six braille-producing keys; the braille reading cell is at the upper part of the writer. The machine weighs 8 ounces.

LABELS AND TAGS

Name: Aluminum Clothing Tags
Source: AFB
Availability: Supplier, above — Sent free of charge on request
Set of 2 each of 10 basic colors, indicated in braille, such as gray, pink, black, white, blue, etc. Tags have a hole at each end permitting them to be sewn on. Correct position indicated by small projection at top.

Name: Plant Labels for Blind Gardeners
Source: RNIB
Availability: Supplier, above — Cat. No. 9403. Price not listed

LOW VISION READING

Lenses and Occluders

Name: De Wohler Sports Glasses
Source: AFB
Availability: Discontinued in catalog listings
These are somewhat stronger telescopic spectacles than the Japanese version, providing a 3½x magnification at distances from about 30 inches to infinity. The lens barrels are mounted on a plastic holder with temples and pupillary distance can be varied by moving serrated levers above the barrels. The nose pieces are also adjustable. The barrels may be adjusted for distances or to supply some spherical correction. With 33 mm adapter rings they may be used as reading aids. The glasses weigh between 3 and 4 ounces without the reading aid.

Name: Occluders
Source: National Society for the Prevention of Blindness, New York
Availability: Supplier, above
Two-clip leaf occluders, flesh, 44 mm
Two-clip round occluders, flesh, 40 mm

Name: Plano Convex Lens
Source: AFB
Availability: Discontinued in catalog listings
This has most often proved helpful to those who have central loss of vision but retain good peripheral sight. It may be combined with a standard 3- to 5-diameter lens to achieve greater magnification. Alone, it gives only two diameters but because of its property of collecting ambient light, it provides exceptionally good contrast. The lens measures 2⅛" in diameter and 1½" in thickness. A ⅞" chromium-plated band protects the edge of the glass against chipping. The magnifier rests directly on the paper while in use and weighs about 8 ounces.

Name: Prominaar (Lens for the weak-sighted)
Source: Lighthouse, Welfare Center for the Blind
Availability: Kowa Optical Utensils Co., Ltd. 5100 yen
The lens was specially devised for those who are too near-sighted to use ordinary eye glasses. This is most useful for children in classrooms. It has a wide field lens and the magnification is 6 times. Includes case with hand-grip.

Prominaar Monocular 6 x 20 with case
#6 close-Up Lens, 22½ mm
#8 Close-Up Lens, 22½ mm
#10 Close-Up Lens, 22½ mm
Stand

Name: Reading Caps
Source: AFB
Availability: Discontinued in catalog listings
The focus of sport glasses can be shortened and the magnification increased by adding plus lenses. This involves the purchase of a standard 30 mm Series V camera lens adapter ring (for the Japanese sport glasses) or a 33 mm Series V camera lens adapter ring (for De Wohler sports glasses) and the insertion of the desired close-up lens. A No. 1 (1 diopter) focuses at 12"; No. 2 at 10"; No. 3 at 8"; No. 6 at 5"; No. 10 at 2", and No. 15 at 1½".
A 24 mm Series V camera lens adapter ring fits the 10 x 20 Monocular and may be used with any of the close-up lenses. This provides very powerful magnification at good working distances. The lenses can be mounted on a laboratory stand with the work placed at a fixed distance. This is not suitable for reading but is intended for inspection or other work purposes.

Name: See-Lector Polaroid Glasses
Source: AFB
Availability: Discontinued in catalog listings
These glasses make use of the principle that two polaroid lenses, rotated with respect to each other, allow more or less light to pass. Standard plastic polaroid sun glasses are provided with extra lenses which can be twisted to give all stages of light. They are of particular use to those who have difficulty in adapting to changes in intensity of light. They are mounted in brown plastic frames with simulated gold wear or vice versa. They will fit comfortably over some forms of ordinary glasses but are not available in clip-on form.

Name: Sports Glasses
Source: AFB
Availability: Discontinued in catalog listings
Lightweight field glasses of Japanese origin with coated lenses and earpieces (enabling them to be worn as spectacles) which give a magnification of 2½ power and a field of 24" at 12 feet for one eye or 30" x 24" for two eyes. The barrels measure 1½" to 2" (depending on focus) and 1½" in diameter. Focusing is adjustable.

Name: Tripod Lens
Source. AFB
Availability: Discontinued in catalog listings
While this glass is described by the manufacturer as capable of 10 diameters of magnification, measurements indicate that it gives slightly over 8 diameters of magnification. It is mounted in a cast white metal frame.

Readers and Telescopes

Name: Adisco Illuminated Magnifier
Source: AFB
Availability: Discontinued in catalog listings
There are three types of Adisco Magnifier available. *Battery Model:* A 5-diameter magnifier with a lens measurement of 1⅞" in diameter to give a field of about 21 typewritten characters. A 2-cell flashlight, using standard 1¼" batteries, provides the light. *Combined Model:* Identical with battery model except an electric attachment is used instead of a flashlight. *Electric Model:* Same as above models except fully electric, this model can be plugged into any 110-120 v outlet for prolonged periods of reading.

Name: Flaw Finder—10X
Source: AFB
Availability: Discontinued in catalog listings
The lens system of this magnifier is mounted in a white plastic barrel about 1¼" in diameter and 1¼" high. A removable pocket flashlight is inserted into the side of the barrel to provide strong illumination. The lens system turns to give proper focus. The field covers about 12 typewritten characters.

Name: Folding Pocket Magnifier
Source: AFB
Availability: Discontinued in catalog listings
This is the standard Bausch & Lomb magnifier such as can be purchased in any optical supply house. The 6-power magnifier has two lenses, given 3 or 3.5 diameters of magnification when used separately or 6 diameters when used together. The 8-power magnifier gives 4, 5, and 8 diameters; the 10 power gives 5, 7, and 10 diameters; and the 20 power gives 5, 7, 10, and 20 diameters.

Name: Megascope 12- or 24-Diameter Lens System
Source: AFB
Availability: Supplier, above Cat. No. MS227: $39.15
The Projection Readers may be adapted to provide 12 or 24 diameters of magnification. The 12-power system incorporates a diffusing lens to spread the light so as to cover the larger reading field which it provides. Knurlhead thumb screws are provided to facilitate rapid interchange with the stronger lens system normally supplied with the reader. Unit includes a focusing knob.

Name: Megascope Projection Reader—12 diameter
Source: AFB
Availability: Supplier, above Cat. No. MS226: $242.60
Same as MS225 (Megascope Projection Reader—24 diameter) but projecting an image 12 times its original size. Shipped express, transportation charges collect on receipt of payment.

Name: Magascope Projection Reader—24 diameter
Source: AFB
Availability: Supplier, above Cat. No. MS225: $242.60
A plastic tray above the machine holds the material to be read and can be moved in both directions by means of a bar extending across the front and near the bottom of the device. A weight holds the material flat against the tray. Focusing is controlled by the knob beneath the tray. Light from a 150 watt projection bulb is focused through the tray against the material and reflection is projected to two mirrors so that the image thrown on the ground glass screen is 24 times its original size.
The tray has 6″ of lateral movement and 4″ of backward travel. The device measures 19″ wide, 12½″ deep, 16″ high, and weighs 18½ lbs. If more illumination is necessary a 200 watt projection bulb may be safely installed. Operates on 110-120 volts ac or dc.

Name: Magni-focuser
Source: AFB
Availability: Discontinued in catalog listings
For those with close to 20/20 visual acuity, this magnifier often gives satisfactory binocular sight for close work. Two diopter magnifying prisms are mounted in a black plastic eyeshade with adjustable plastic headband. This provides 2½-diameter magnification which can be worn over standard corrective glasses. Working distance, however, is quite close.

Name: Monocular
Source: AFB
Availability: Discontinued in catalog listings
A compact prism monocular with coated lenses which makes an object at 100 feet, for example, seem to be only 10 feet distant. It is Japanese in origin and measures 3 inches long and about 1¾ inches across its widest dimension. It is focused by turning the eyepiece. The device is furnished with a pigskin carrying case and cord for wearing about the neck. Because of its high magnification, it is more difficult to hold steady than the Prismascope but may be preferred because of its somewhat greater field width and strength.

Name: Penscope
Source: AFB
Availability: Discontinued in catalog listings
A pocket telescope giving 6 diameters of magnification—at 60 feet an object appears as if 10 feet away. The lenses are coated for maximum light transmission. It measures approximately 6″ in diameter and 7½″ long.

Name: Plasta Cataract Reader
Source: AFB
Availability: Discontinued in catalog listings
An all plastic aspheric magnifier with a stand holding it at the correct distance from the page. Lens measures about 2″ in diameter which covers about 26 typewritten characters at a time. The stand is cut to permit light to reach the page.
Also available:
Plasta Cataract Reader with handle (same magnification)
Plasta Cataract Reader, I-Gard, 7X

Name: Telescope-Microscope
Source: AFB
Availability: Discontinued in catalog listings
An eight-power pocket telescope which will focus from about 2 feet to infinity. The eye piece is pulled out to focus. When the sleeves are pushed together and a focusing

mirror screwed over the objective end, the device becomes a 60x microscope with the image inverted. Since the lenses are not coated, good light is required. The tube is less than ¾" in diameter and 5" long, including the focusing mirror. Weight is slightly over an ounce.

Name: Telereader
Source: Florida Council for the Blind, 416 South Tampania, Tampa, Florida
Availability: Supplier, above $1000
The device is a closed-circuit television system. Telereader is a suitcase-sized box containing a small television camera. Reading material is placed on a glass window in the box and the image is scanned and transmitted to a standard television receiver by means of a coaxial cable. This results in an image enlarged many times without appreciable distortion. It can enable nearly blind youngsters to read the same textbooks as their classmates.

Reading Stands

Name: Gore Reading Stand
Source: APH
Availability: Supplier, above $20.00
This device is designed to aid partially sighted children or adults in placing their reading materials in the most convenient position to meet their individual needs.

Name: Music Rack for Partially Sighted
Source: APH
Availability: Supplier, above $5.65
This device consists of a special wooden music rack designed to fit any upright piano. The rack is so constructed that it is adjustable forward and backward, up and down, and for tilting to the proper angle so that the inkprint music can be placed at the correct eye level and focal vision point.

Name: Reading Desk for the Partially Sighted
Source: Technische Hogeschool
Availability: Supplier, above Approx. $30.00
A special reading desk which can be folded into a small package and used in conjunction with high magnification to enable the partially sighted to read books and papers.

MOBILITY

Canes—(Alphabetical by Supplier)

Name: Aluminaid Folding Cane
Source: AFB
Availability: Supplier, above Cat. No. TRS178: $3.00
Four-section, tapered, white enamel on aluminum, with hardened steel round tip, and black plastic cap on top. Sections are held together with elastic and wrist band of elastic. Diameter of largest section is ½" and the smallest 5/16". Even inch lengths from 34" to 54". (Specify length.)
(If desired, a 6" strip of red Scotchlite can be added to the bottom section of this cane for 15¢ extra.)

Name: Aluminum Canes
Source: AFB
Availability: Supplier, above
Cat. No. TRS235: Crook handle and shank made in one piece of ½-inch diameter tubing. Furnished without ferrule and bushing in any length. $3.20
Cat. No. TRS236: Same as above finished with ferrule and bushing in any length. $3.80

Name: Aluminum Cane
Source: AFB
Availability: Supplier, above
Handle is ⅝" with 1¾" radius extending down to ½" shank. Handle is force-fitted to shaft and campfered to make a neat joint. Cane has ⅝" glide type ferrule. Rubber buffer in ferrule dampens metallic sound, but hardened steel cap over buffer puts out usable sound pulse for orientation cues. When coated with Scotchlite, complies with white cane legislation in some states.
Cat. No. TRS168: Any length to 48" $2.55
Cat. No. TRS169: From 49" to 65" $3.75
Cat. No. TRS170: Over 65" $4.35

Name: Golf Shank Cane
Source: AFB
Availability: Supplier, above Cat. No. TRS171: $3.45
Based on the shafts from golf shanks with an aluminum crook and a large glide ferrule. The longest length weighs only 5½ ounces. It is not suitable for receiving Scotchlite Coatings, and is not recommended for use where a white cane would be advantageous. Available in 37", 41", 43", and 46" lengths. (Specify length.)

Name: Ladies' Pocket Cane
Source: AFB
Availability: Supplier, above Cat. No. TRM175: $3.85
A seven-section cane, otherwise identical to TRM174, but opening out to a maximum of 44" and collapsing to 8¼". Diameter closed 11/16" and the weight is 4 oz.

Name: Mahler Collapsible Cane with Crook Handle
Source: AFB
Availability: Supplier, above Cat. No. TRS172: $5.75
An aluminum cane in three sections, collapsing to 19" and extending to 46". Crook is integral part of top section, which measures 2¾" in diameter. Cane is locked or unlocked at any point by twisting two sections with respect to each other. Sturdier than any similar telescopic cane and capable of being repaired should any section be damaged. Weight 7 ounces. Small glide ferrule with taper to prevent catching in gratings.

Name: Mahler Collapsible Cane with Rubber Grip
Source: AFB
Availability: Supplier, above Cat. No. TRS173: $5.50
This is identical with TRS172 (Mohler Collapsible Cane with Crook Handle) except that it is fitted with a rubber bicycle grip instead of a crook. Collapses to 17¾" and extends to 44½".

Name: Men's Pocket Cane
Source: AFB
Availability: Supplier, above Cat. No. TRM174: $4.80
Based on aluminum camera tripod leg. Not an all-purpose cane since it breaks easily

and will loosen up with continuous use. Eight sections, opening to maximum of 53″ and collapsing to 9½″. Top section coated with ribbed plastic, other sections natural aluminum. Nylon braid thong attached to top. Diameter closed ¾″; ¾″ glide ferrule, weight 5 oz.

Name: Pocket Cane #10
Source: AFB
Availability: Supplier, above — Cat. No. TRM176: $4.65
Identical to TRM174 (Men's Pocket Cane), but made with 10 sections. Diameter closed is 25/32″. Extends to a maximum of 44″ closes to 7″. Weight 3¾ oz. (This is the least sturdy, but most flexible of the three, since it can be adjusted to more varied lengths.)

Name: Replacement Parts for Canes
Source: AFB
Availability: Supplier, above

TRS179: Aluminum & Mahler Collapsible Canes, ferrule	$.15
TRS180: Colf Shank Cane, ferrule	$.15
TRS181: Aluminum and Mahler Collapsible Canes, cap bushing	$.30
TRS182: Mahler Cane, split bushings, upper section	$.65
TRS183: Mahler Cane, split bushings, lower section	$.60
Folding Canes, Model F (AFB)	
TRS184: internal elastic	$.20
TRS185: ferrule	$.25
TRS186: cap	$.15
TRS187: handle elastic	$.15
Folding Canes, Aluminaid	
TRS188: ferrule and set screw	$.40
TRS189: internal elastic	$.20
TRS190: handle elastic	$.15
TRS191: rubber cap (top)	$.10

Name: Scotchlite Cane Coating
Source: AFB
Availability: Supplier, above — Cat. No. TRC192: $.95
Plastic tape covered with microscopic glass beads. About 50 times as reflective as paint or enamel. Coating supplied in strips two inches wide and is applied so as to leave a seam down the underside of cane. Two lengths are required for wooden canes, leaving two seams. Kit comprises 1 yd. of silver and 6″ of red tape.

Name: White Folding Cane
Source: Lighthouse, Welfare Center for the Blind
Availability: Daimaru Chemical Industry Co., Ltd. — 500 yen
This cane is made of plastic tubing and never rusts or breaks. It is light in weight and convenient to carry in pockets or handbags.

Name: White Folding Canes
Source: Lighthouse, Welfare Center for the Blind
Availability: Hamamatsu Welfare Association for the Blind
The canes are made of four sections of strong wood tubing joined through the center by elastic cord.

A. Large (97 cm), medium (92.5 cm), and small (88 cm) in velveteen sack	600 yen
B. Large (97 cm), medium (92.5 cm), and small (88 cm)	500 yen
C. 103-110 cm	700 yen
D. 103-110 cm	600 yen

Name: Baston Semaforo (Illuminated Cane)
Source: D. Jose Roig, Delegacion Provincial de Ciegos, Barcelona, Spain
Availability: Supplier, above
This cane, invented by M. A. Galvez of Barcelona, incorporates a red signal light in the upper third of its length, which is designed to alert drivers approaching a blind pedestrian at night or in dimly illuminated situations. American users reported difficulties with the battery power supply; found the cane heavy; were concerned that the flashing light might be interpreted as a signal for assistance; and felt, on the basis of consideration of the relative velocities of automobile vs pedestrians, that the cane would have limited usefulness for the purpose intended.

Name: White Canes
Source: RNIB
Availability: Supplier, above
The canes are of metal and collapsible. They have been devised for portability and it is not intended that they should be used other than as guide sticks and an indication that the user is blind. They are not recommended to be used as a means of support. When required for use the top section is held and other pieces automatically fall into place.

Cat. No. 9494: 33″ (9¾″ folded)	£0. 7. 0
Cat. No. 9495: 36″ (10″ folded)	£0. 7. 0
Cat. No. 9437: 40″ (11″ folded)	£0. 7. 9
Cat. No. 9436: for children, 27″ (10″ folded)	£0. 6. 0

Name: White Canes—Deaf-Blind
Source: RNIB
Availability: Supplier, above
Similar to Cat. Nos. 9494-9495 but with the top section painted black to denote the user is deaf-blind.

Cat. No. 9461: 33″ (9¼″ folded)	£0. 7. 0
Cat. No. 9462: 36″ (10″ folded)	£0. 7. 0

Name: Canes
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

White, wood, one piece	4,00 DM
White, metal, folding, 83 or 92 cm long	5,00 DM

Name: White Wooden Canes
Source: T. W. Minton & Co., Barbourville, Kentucky
Uncle Sam's Umbrella Shop, 110 West 45th Street, New York, New York
Stanley Novak Co., 10 West 23rd Street, New York 10, New York
Penna. Association for the Blind, Bedford Branch, 209 West Pitt Street, Bedford, Pennsylvania
Availability: Canes may be obtained by writing directly to the suppliers above.

Electronic Canes

Name: Electronic Cane
Source: R. J. Gibson, Franklin Institute, Philadelphia, Pennsylvania
Availability: Experimental prototype
Detection of step-down only electronically is added to the normal functions of the cane by monitoring the capacitance to the ground. Output is tactile (in cane handle) or aural (headphone), and 1500 kc radiation frequency is utilized. All miniaturized electronics are in the handle of cane.

Name: Electronic Cane
Source: Polish Union for the Blind
Availability: Supplier, above
The principle of this device is that of the well-known scheme of capacitance variation of a high-frequency oscillator contained within a cane which changes frequency upon approaching an obstacle. The device, planned on transistorized designs with miniature circuits, is under construction.

Name: Electronic Cane
Source: Site, Inc., Topeka, Kansas
Availability: Experimental prototype
A 2-megacycle oscillator is used to monitor a capacitance to ground when step-up, step-down or drop-off (1 ft. +) are detected. This is told the user in verbal form. The device contains 31 transistors and magnetically recorded spoken phrases.
The device is currently under re-design to result in a box small enough to fit into the pocket, plus a pen-size capsule to clasp on antenna cane without connecting wires. Bone conduction transducer will fit behind ear.

Guidance Devices and Systems

Name: Brush Constant-Rate-of-Modulation System
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
The principles of operation of systems frequency-modulated at a constant rate are the same as for sine-wave-modulated systems. In this case, however, the transmitter is frequency-modulated with a sawtooth rather than a sine wave; the sawtooth wave may be regular or clipped. The advantage of a constant rate of modulation is that the individual audio pulses (indicative of range) are steady rather than warbled. The Brush device utilizes a high supersonic frequency. It consists of a supersonic transmitter, receiver, and crystal transducers in one container held in the hand and used as a probe, and a battery supply carried on a shoulder strap. An auditory signal is presented which consists of a series of pulses of frequency dependent on range. Low-pitched pulses indicate a nearby object; high-pitched pulses a more distant object. A sawtooth-wave generator frequency modulates a high frequency oscillator, the output of which is amplified and applied to a crystal transducer. The signal reflected from an object enters the receiving transducer after a time interval which depends on the distance to the object. A portion of the outgoing signal is mixed with the receiving signal, producing an audio frequency beat. After amplification, the high frequency components are filtered out and the audio signal appears in the earphones.

Name: Brush Sine Wave Modulation Model
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
This nonportable supersonic device presents an auditory signal consisting of a warbled tone, the highest frequency of the warble providing an indication of the distance of the object from the transducers. A low tone indicates a nearby object; a higher tone indicates a more distant one. In all frequency-modulated systems, the frequency of the transmitter is made to vary with time above and below an average value; the variation is usually accomplished by modulating the transmitter with a sine or a sawtooth wave. Thus, the difference in frequency between the transmitted and received signals is a function of the time of flight of the sound wave and this is proportional to the distance of an object; the difference is small for an object which is close; it is large for a distant object. The Doppler shift in frequency for an observer moving at a velocity of 3 feet per second and for a transmitter of 30 kc is about 170 cycles per second. This frequency is superimposed on the audio frequency difference between the

transmitted and received frequencies, thereby making the range indication ambiguous and dependent on the relative velocities of the observer and object. All frequency-modulated systems have this limitation; it becomes progressively worse at higher supersonic frequencies.

Name: Curb Detector
Source: T. A. Benham, Haverford College, Haverford, Pennsylvania
Availability: Experimental prototype
The device is ranged by optical triangulation, using light in the near infrared and a germanium photodiode light detector. Output is from a tactile stimulator mounted in the handle. It will detect holes, down-curbs over 3″, up-curbs over 6″, and low obstacles. As the range changes, due to walking motion (from 3′ to 7′), an actuator is positioned to produce equal light signals from two photodiodes. A down-curb casts a shadow causing light to be lost. An up-curb reduces the range so the system cannot follow, again causing the light to be lost. Light loss is signaled to the user.

Name: 80-Channel Elektroftalm
Source: Starkiewicz/Kuliszewski, Warsaw, Poland
Availability: Experimental prototype
An 80-channel photocell mosaic constitutes the front part (detector) of a headband device in which each channel is coupled via a transistorized amplifier and electromechanical solenoid output containing blunt-ended metal pins. A wide angle tactile impression of the environment before the user is felt by him on his forehead through the pressure extended by the solenoid pins. Subjects report a "field of vision" of 36 by 20 inches.

Name: Electronic Guidance Device
Source: Clifford M. Witcher, MIT, Cambridge, Massachusetts
Availability: Experimental prototype—discontinued
A projected electronic guidance device which would have an oscillating system automatically scanning a wide enough arc to protect the traveler. Location of obstacles would be accomplished by a commutator connection to four buttons, which would indicate locations of obstacles on a horizontal azimuth and ranging would be indicated by speed of vibrations. A second light beam, directed toward the ground at a sharp angle, would trigger a fifth button when a step-down is approached.

Name: Franklin Institute Ultraviolent System
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
The device carried its own source of ultraviolent radiation, at wavelengths from 1850 to 2900 Å. The nonvisible light would be projected as a narrow beam, and the distance of an obstacle would be determined by automatic triangulation, using a special type of electron counter tube. The devices constructed were nonportable bench models, and not available for appraisal as possible guidance aids.

Name: Guiding Device
Source: B. Jacobson, Karolinska Institutet, Stockholm, Sweden
Availability: Experimental prototype
This ambient light obstacle detector with tactile output is a further development of the Kallmann Optar device. The principle employed is that of focusing of a sharp image of an object in one plan only by means of a lens or concave mirror. Detection of a sharp image is achieved by scanning the focused image with one or two vibrating mirrors, reflecting the light upon a photomultiplier system and noting the presence of transients. Transients are maximum for the sharpest focus. Ranging is accomplished by varying the lens/plate or mirror/plate distance.

Name: Guiding Device
Source: H. Kallmann, New York, New York
Availability: Experimental prototype—1950 (discontinued)
In this device, precursor to a whole range of guiding devices, a lens focuses objects in the image space behind it. A spiral or helical film printed with radial lines or slots rotates so that the lines cut across the images sequentially, scanning the complete image space rather rapidly and presenting to the operator a sound pattern which depends on the existence and location of objects in his path. This sound pattern is developed by varying the spacing of the lines on the film so that cutting images at different points in the image space produce modulation at different frequencies. A modification provides a suitable signal to drive a servo which can focus on an object and determine its range.

Name: Guidance Device
Source: Leslie Kay, University of Birmingham, Birmingham, England
Availability: Experimental prototype
Research is currently under way to determine the extent to which a human user can form a sound picture of the spatial environment before him by utilizing a binaural transducer coupled to a two-channel ultrasonic radiation/detector. Specially curved transducers are utilized and a frequency modulated propagation wave is used, similar to that of the bat. The present prototype uses a flashlight-like probe with an effective beam angle of 10 degrees in a monaural configuration.

Name: Guidance Device
Source: National Academy of Science
Availability: Experimental prototype—1947 (discontinued)
An ultransonic sound ranging—16.5 to 65.0 kc/sec device with a total range of 50 feet. The reflected energy was so little that the user often had no knowledge of certain kinds of objects and there was no step-down detection.

Model I: Metal bar struck by an electromagnetic hammer. Receiver generated auditory or tactile cue.

Model II and later: Special transducers generated sound.

Name: Guiding Device
Source: J. David Pye, Institute of Laryngology and Otology, London, England
Availability: Experimental prototype
The radiation of ultrasonic energy is detected by a special transducer which in turn excites a beat frequency oscillator to produce audible signals. Binaural listening has been utilized as well as monaural listening. Many variations of the apparatus are under development which shows promise as a mobility aid. Quite accurate discrimination is possible by the human user.

Name: Guidance System
Source: Technische Hogeschool
Availability: Experimental prototype
A guidance system in public buildings such as railway stations and post offices consisting of buried wires fed by an audio frequency. The blind person wears an earpiece which is tuned to that frequency. A strong signal is heard when the person is on his course; if he strays to the right or left, the sound becomes weaker.

Name: Haskins Laboratories Continuous-Tone Device
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
This portable device consists of a hand-held probe containing a light source, lens system, photocell, and receiver and a container with battery supply, carried on a shoulder strap. A modulated light beam is used, and the device depends on the

principle of triangulation, but employs a "follow-up" mechanism instead of a coding disc. The pointer of a milliammeter carries a lightweight mask across an aperture in front of a photocell. The beam reflected from an obstacle reaches the photocell through the aperture. The photocell output, after amplification and rectification, deflects the meter needle until it interrupts most of the reflected beam and an equilibrium is reached. Meter current is presented as a continuous tone of variable frequency generated by a beat frequency oscillator controlled by a reactance tube. The equilibrium of the meter pointer and masks will depend somewhat on the reflectivity of an object. There is therefore some slight ambiguity in the image indication. Under conditions of relatively intense ambient radiation, the photocell tends to saturate and its sensitivity to the modulated light decreases, causing irregular variations in the frequency of the signal.

Name: Hoover Supersonic System
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
Devices of this system utilize the low end of the supersonic range. The model consists of a transmitter and a microphone in a hand-held unit used as a probe, and a receiver and batteries in another container carried on a shoulder strap. An auditory signal is presented which consists of a series of pulses. The signal is heard whenever an object is present within the range of the device. To learn the distance of an object, the user raises the lever on the handle (which causes the signal to disappear), and searches for a position of the lever at which the signal reappears. The angle to which the level has been raised is related to the distance of the object from the microphone, and with the help of a series of raised pins on the handle, the operator can judge the distance of the object. The primary features of this device are that (a) the supersonic radiation is generated by a mechanically struck metal bar, and (b) provision is made for searching in range.

Name: Infra-red Near Ranging Device
Source: Clifford M. Witcher, MIT, Cambridge, Massachusetts
Availability: Experimental model—(discontinued)
Obstacles to 10 foot range detected in vertical plane, step-downs of 2 inches, shallow pools of water, etc. As user approached, vibrations in handle increased. Scanning left to right was automatic and indicated whether it was +15 or +30 degrees off center. The device was half the size of an attache case and battery-powered.

Name: Lashley Ambient Light Device
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
This is a portable optical device consisting of a prospector carried in the hand, and a small container carried on a shoulder strap. The device consists of a collecting lens, aperture, phototube, a direct current amplifier, and an audio frequency oscillator and amplifier. The device produces a steady audio signal of predetermined pitch, so long as it receives constant light of any intensity from an object. If the received light is suddenly decreased, the pitch falls sharply, and then returns slowly to its original level. Conversely, if the device is scanned from a darker to a brighter portion of an object, the pitch rises, and then falls to its original level. The change in pitch is a function of the change in brightness. The pitch was set initially for approximately one octave on either side of the mid-frequency.

Name: Magnetic Compass
Source: B. Jacobson, Karolinska Institutet, Stockholm, Sweden
Availability: Experimental prototype
This compass consists of a box with a magnetic bar, free to rotate on a pivot between two jewel bearings, operating as a compass needle. The orientation of the bar via the

box is detected by a simple optical system which focuses a narrow beam of light on a mirror attached to the pivot. The reflected light illuminates a photocell when the box is oriented on a desired course, and the output is amplified causing a solenoid to thrust a peg from the top of the box.

Name: Obstacle Detector
Source: T. A. Benham, Haverford College, Haverford, Pennsylvania
Availability: Experimental prototype
The instrument is ranged by optical triangulation using light in the near infra-red, and a germanium photodiode light detector. Output to the blind user is from a tactile stimulator mounted in the handle. It weighs 2 pounds, is housed in a box, approximately 7″ x 7″ x 3″ including the handle. Its maximum detection range is 9′ but this can be reduced to 5′ by depressing a switch in the handle. It operates for five hours per charge from a rechargeable battery.

Name: Optical Probe and Electrical/Tactile Transducer
Source: Paul Daudemont de St. Quentin (Italy)
Availability: Experimental prototype—1953
The device consists of a miniature objective/photocell receptor for light signals; an interconnecting cable; and a 5x5 array grid of metal buttons in a plastic flexible belt which is held against the skin of the forehead or chest with long straps. Each metal button corresponds to one photocell channel in the objective system. When light falls on the photocell, a current path is completed through the integral amplifier (fed from a 4-volt battery), and the user feels an electrical pressure via the metal button. No data on voltage pressure or current flow are available. The device was built under UNESCO auspices at the Academy of Sciences in Rome.

Name: Orientation Device
Source: J. C. Swail, National Research Council, Ottawa, Canada
Availability: Experimental prototype
A common miniature transistorized radio receiver having a highly directional ferrite rod antenna has been modified by incorporation of a simple circuit which produces a series of sharp pulses. In the absence of a received carrier, the pulses are heard at a very low repetition rate; as the strength of the received carrier increases, the pulse repetition rate also increases. In use, a strong signal is tuned in, the pulse generator switched in, and the set rotated for minimum pitch. Discrimination of about 5 degrees is possible. An earphone transducer is used.

Name: Paging Device
Source: St. Dunstan's, London, England
Availability: Experimental prototype
An adaptation of the intercommunication system, as used in hospitals, has been made by means of an induction loop and miniature tuned receiver giving audible signals in an outdoor environment for both recreational and general guidance needs.

Name: Pan-Audio System
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
Models of this system were made by placing two hearing aids on opposite sides of a baffle so as to stimulate the binaural effects of normal hearing. The hearing aids are carried and connected so that the one which is directed toward the user's right side is connected to the headphone on his right ear, and the other to the left. It was planned so that the gain of the hearing aid amplifiers would be set so that the volume of sound reaching the user's ear would be about the same as without a hearing aid most of the time. However, the gain of the hearing aids was to increase sharply for a few milliseconds following a pulse of sound, thereby enabling the user to hear

highly amplified reflections of the sound echo from nearby objects. Development proceeded as far as the stage of evolving adequate acoustical shielding for the hearing aids. A few tests were made with the gain set higher than originally planned, but the automatic gain control feature was not tried. Difficulties were encountered in securing useful directional reception, and further development was deferred.

Name: Pattern Optical System
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
This nonportable laboratory device incorporates the principle of automatic scanning. An auditory signal is presented which consists of combinations of frequencies, the particular combinations depending on the size and shape of the object and its position in the field of view. The device utilizes ambient light reflected from objects in the environment. Scanning is achieved by the rotation of a cubical mirror at about ten revolutions per minute. Each of the four mirrors "look" at the forward environment in succession, scanning it from left to right. The vertical position of an object is indicated by a frequency component of the complex tone comprising the "pattern," which is high or low in accord with high or low object position. This is accomplished by means of a lens, slit, rotating tone generator, and photocell. The lens forms an image of the object at a point on a vertical slit which corresponds to the vertical position of the object. Behind the slit is a transparent cylinder which carries a series of variable density sound tracks past the slit, thereby modulating the light which passes through to a multiplier photocell. Since the 10 sound tracks modulate the light at different frequencies ranging from 400 to 1700 cycles per second, light from a bright object will generate one or more frequencies which depend on the elevation of the object and the position of its image on the slit. As the object moves closer to the device, the image size increases so that the first five and then six sound tracks are illuminated and five or six frequencies are heard. For closer approach the image is further increased until all the sound tracks are illuminated and ten frequencies are heard simultaneously. Azimuth localization is indicated by the time interval between the start of a scan and the instant the signal from an object is first heard; the time interval is short for objects on the left, longer for objects toward the right of the field of view.

Name: Signal Corps Optical Guidance Device
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
This portable device consists of a light source, lens system, photocell, and receiver in one container carried in the hand and used as a probe, and a battery supply in another container carried on a shoulder strap. An auditory signal is presented which consists of a series of pulses operated in discrete steps from 32 pulses per second for an object at 3 feet to 2 pulses for an object at 15 feet. An independent light source, placed at the focus of a transmitting lens, projects a very narrow beam which is modulated at about 500 cps. The transmitted light falling on an obstacle is partly reflected to a receiving lens which forms an image of the illuminated spot in its focal plane. Range is determined by automatic triangulation of the incoming beam, using a coding disc placed between the phototube and the receiving lens. This disc is divided into concentric rings with different numbers of holes in each ring. As an object moves closer to the device, the image moves outward from the innermost ring; the light is then interrupted twice a second. For short-object distances the received light illuminates successive rings until, for an object at 3 feet (minimum distance), the outermost ring with its 16 holes is illuminated. The received light from an object at this distance is interrupted 32 times per second. Since the transmitted light beam is modulated at 500 cycles, a brief tone at that frequency is heard in the earphones from 2 to 32 times per second, depending on object distance. Thus, the change from one pulse repetition rate to another (corresponding to change in object distance) is

not abrupt since two of the rings on the disc may be illuminated simultaneously. A mixture of pulse repetition rates will then be heard for certain positions of an object. In practice, selectivity is not perfect; some ambient light gets through the preamplifier, resulting in a distinct "hiss" when the device is used in bright sunlight.

Name: Size-Shape Device
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
This device is used to determine the size and shape of obstacles. Light reflected from an obstacle enters a phototube, the direct current output voltage of which is directly proportional to the intensity of the light received. The voltage is applied to a reactance tube which controls the output of a beat frequency oscillator. A constant signal is obtained as long as the received light remains constant, but the signal frequency changes when the received light intensity changes, as in scanning from a light to a dark object. Beam widths may be varied by an interchange of diaphragms in front of the phototube.

Name: Stereo-Optical Edge Detector
Source: A. R. Johnson, Bio-Dynamics, Inc., Cambridge, Massachusetts
Availability: Experimental prototype
A camera for stereo-optical still photography has been modified as a stereo-optical edge detector by substituting a mosaic of photo sensitive elements in the two image planes in place of film. In practice, the camera is held in the horizontal plane and scanned horizontally, whereupon any nearby edge will be detected if it has a vertical component. The present prototype incorporates an audible output via earphones.

Name: Stromberg-Carlson Continuous Tone Supersonic System
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
The nonportable device of this system utilizes the low end of the supersonic range. A pair of magnetostriction transducers is used as a probe. The device can be adapted to present either of the two following types of signals:

(a) An auditory signal consisting of a sine wave which varies continuously in frequency with the distance of an object from the transducers. A high-pitched tone indicates a nearby object; a lower tone indicates a more distant object.

(b) A tactile signal consisting of a series of pulses with the time interval between the pulses varying as the distance of an object from the transducers. A low repetition rate indicates a distant object; a higher repetition rate indicates a nearby object. One property of the circuit used is that after the first received pulse arrives at the receiver, succeeding received pulses have no effect until the circuit is restored to its original condition, that is, until another pulse is transmitted. Consequently, the device responds only to the nearest obstacle in its path.

Name: Stromberg-Carlson Echo Pulse Model
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
Utilizing a supersonic frequency of about 30 kc, this device consists of a transmitter and receiver in one container carried on a shoulder strap, and a pair of magnetostriction transducers carried in the hand and used as a probe. It is equipped so that the subject may receive either a tactile of auditory signal consisting of pulses which repeat at an increasing rate as an obstacle is approached. The range of signal repetition is from 4 to 30 seconds. Objects beyond the maximum range (adjustable) give no signal. The tactile stimulator used with this device is a modified crystal phonograph pickup cartridge with a short length of L-shaped wire used as a stylus in place of

the needle. The stimulator is mounted on the transducer with the stylus at the front and top of the handle. This position permits holding the handle with the side of the thumb touching the stylus. Later models employing the echo-pulse system were adapted for auditory and electrical signal presentation.

Name: Stromberg-Carlson Pulsed Frequency Modulation
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
The transmitter and receiver are in one container carried on a shoulder strap, and the pair of magnetostriction transducers are carried in the hand as a probe. An auditory signal is presented which consists of a series of pulses of a frequency depending on range. Low-pitched tones indicate nearness; high-pitched tones, distance. The repetition rate of the pulses remains constant. A sawtooth-wave generator modulates a high frequency oscillator, sweeping it from about 20 to 22 kc, entirely across the pass bands of the transducers. The designation "pulsed-frequency modulation" has been applied to systems of this type. The signal received from a reflecting object enters a tuned amplifier and is then mixed with the transmitter frequency outgoing at the instant the reflected signal is received. The audio beat frequency is detected, amplified, and fed to the earphones. An automatic volume control circuit is inserted between the tuned amplifier and the output of the amplifier to compensate for variations in the amplitude of the received signals. A later improved model employing supersonics at 65 kc was made available for testing.

Name: Stromberg-Carlson "Two Click" Model
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
Utilizing the low end of the supersonic range, this laboratory nonportable device employs a pair of magnetostriction transducers, and presents an auditory signal consisting of repeated pairs of pulses or clicks separated by a time interval proportional to the distance of the object from which the supersonic radiation is reflected. A high frequency oscillator is modulated so that the signal emerges at a repetition rate adjustable between 5 and 50 pulses per second. The transmitted pulse reaches the receiver by way of a supersonic sound wave which travels to a reflecting object and back. The signal from the receiver and detector consists, therefore, of a pair of pulses separated in time by an amount proportional to the distance of the reflecting object.

Name: Transistorized "Foghorn"
Source: Standard Telephones and Cables Ltd., England
Availability: Experimental prototype—1962
A transistor operated "foghorn" for the blind is now undergoing tests. The blind person carries a small supersonic dog whistle. When blown, the whistle sound is picked up by a microphone on the device which then rings a bell. The blind person can estimate his position in relation to the known location of the device by judging the direction and intensity of the bell. The range of the device is about 60 yards.

Name: Ultransonic Echo-Ranging System
Source: Louis Martinez, Pantronic, Inc.
Availability: Experimental prototype—(discontinued)
The device, based on a sonar principle of Pantronic's invention, can be packaged to appear like a hearing aid, for approximately the same cost, and would not interfere with normal hearing ability. System contains less than 10 transistors. It depends upon a "fundamental point in modulation theory" which gives the most effective means of presenting echo information.

Name: Ultrasonic Obstacle Detector
Source: S. B. Batdorf/Lockheed Company, Sunnydale, California
Availability: Experimental prototype
In the form originally proposed the device was analogous to a pulse doppler. A short pulse of fixed frequency was heterodyned against a variable frequency local oscillator to obtain range information. There was difficulty, however, in meeting conflicting requirements. On one hand the pulse must be reasonably short in order that the beat frequency will not change appreciably and, on the other hand, the pulse must be fairly long in order to have a sufficient number of cycles of the beat frequency to provide a clear tone. The difficulty can be removed by the use of a technique analogous to FM radar. The pulse could last for 0.1 sec, during which time the frequency would be varied linearly, from, say, 20 kc/sec to 30 kc/sec. The echo received could be heterodyned against the emitted signal frequency thus resulting in a beat frequency proportional to the distance of the object producing the echo.
A simpler variation uses a series of pulses, and the reflected sound comes to the earphones of the user as a series of clicks. As the user nears the object detected the signal becomes louder.

Name: Ultrasonic Obstacle Detector Device
Source: Valradio Ltd., Waltham, England
Availability: Experimental prototype—1961
The device, to enable blind persons to detect obstacles in their way, sends out a beam of high pitch sound which rebounds off objects in its path. The user is able to judge the location of the obstacle through variations in pitch of the sounds as they rebound. It is about the size of a box camera and resembles a flashlight in design.

Name: Videotronic, Model II
Source: J. Alexander, Jr.
Availability: Experimental prototype—1961 (discontinued)
This is an optical ranging device utilizing a variable focus lens system; photocells for detection (in lens system) and establishment of ambient light cut-off level (outside of lens system); a common emitter transistorized oscillator coupled to a Wheatstone bridge; and a transformer-matching output stage to an earphone sound transducer. The general configuration resembles other Optar-type guiding devices.
A Model I Videotronic was designed around sound ranging techniques and included a tuned amplifier, a bridge rectifier, univibrator, and retrigger circuit and transmitter. The system did not function properly due to the unavailability of a suitable transducer; the sound dispersed too rapidly for adequate resolution, and the equipment was too bulky.

Name: Witcher Audio Frequency Obstacle Locator
Source: Haskins Laboratories/Committee on Sensory Devices, New York, New York
Availability: Experimental prototype—1947 (discontinued)
In this device an audio frequency source (at about 10,000 cps) was used as an aid in the detection of obstacles by audible echoes. A sawtooth generator and a differentiating circuit were used to produce a series of sharp pulses which were amplified and fed to the type of high frequency horn type speaker (tweeter). The user determined the presence or absence of an obstacle by the intensity of the reflected signal.

Optical Probes

Name: Audi-Vis
Source: Dunn Engineering Associates, Cambridge, Massachusetts
Availability: Production prototype—1957 (discontinued)
The device was a hand-held optical probe with transistor amplifier/oscillator whose

output was fed either into a small loudspeaker or a miniature earphone. Its durability was undetermined.

Name: Light Detector
Source: Technische Hogeschool
Availability: Experimental prototype
A pocket sized device, transistorized and powered solely by a photocell. It gives an audible signal when turned toward the light. It can be used to tell if a light bulb is turned on or off, to locate windows etc.

Name: Light Ranging Device
Source: Ames Laboratories, Fort Monmouth, New Jersey
Availability: Experimental prototype (discontinued)
This device made use of a narrow beam of light which scanned the environment. Whenever a small amount of light was reflected back, the traveler was notified of an object in his path. There was a tremendous loss of transmitted power in reflection. The Franklin Institute experimented with the device using ultraviolet light. These experiments are believed to have been discontinued.

Name: Transistorized Photocell Optical probe
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Experimental prototype—1942
A device wherein the intensity of incident light is used to vary the frequency of a tone in an earpiece. Developed under Veterans Administration contract.

Travel Aids

Name: Arm Bands
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above
For protection in traffic, gold with 3 black dots.

Cotton	0,80 DM
Knitted	1,50 DM

Name: Badges
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above — 0,70 DM
Enamelled, yellow with 3 black dots, with button.

Name: Taxi Buttons
Source: AFB
Availability: Supplier, above — Cat. No. MC220: $.55
A 4″ yellow button carrying in bold, black letters the single word "TAXI." The user simply stands at the edge of the walk, holding the button up towards oncoming traffic. Cruising drivers notice it and stop.

Walking Sticks—(Alphabetical by Supplier)

Name: Walking Sticks
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

White—for men	
with metal point	3,50 DM
with rubber point	3,80 DM

White—for women
with metal point 3,20 DM
with rubber point 3,50 DM
Folding cane 6,25 DM
plastic tips 1,20 DM

Name: White Walking Sticks
Source: RNIB
Availability: Supplier, above
The standard stick fitted with strips of Scotchlite having reflecting properties devised for use at night in country districts where it is normal to rely on headlights of cars. In such areas the stick is visible at substantially greater distances than the standard white stick and will afford greater protection. The stick, however, is not likely to give greater protection in built-up areas where there is street lighting and motorists do not normally rely on headlights.

Cat. No. 9467: for men, 36″ £0. 8. 6
Cat. No. 9468: for ladies, 36″ £0. 8. 6

Name: White Walking Sticks
Source: RNIB
Availability: Supplier, above
A wooden crook-handle stick with a steel-ended ferrule and sprayed, except for the handle, with white cellulose.

Cat. No. 9296: for men, 36″ £0. 3. 9
Cat. No. 9300: for men, 33″ £0. 3. 9
Cat. No. 9297: for ladies, 36″ £0. 3. 9
Cat. No. 9301: for ladies, 33″ £0. 3. 9

Name: White Walking Sticks for Deaf-Blind
Source: RNIB
Availability: Supplier, above
This device is similar to the standard stick but the crook handle is painted black to indicate that the user is deaf-blind.

Cat. No. 9463: 36″ £0. 3. 9
Cat. No. 9302: 33″ £0. 3. 9

Name: Walking Stick Sleeves
Source: RNIB
Availability: Supplier, above Cat. No. 9456: £0. 1. 3
Brass sleeves for fitting to the bottom of any of the previously mentioned sticks to prevent undue wear. Supplied with fixing screw.

Name: Walking Stick Sleeves
Source: RNIB
Availability: Supplier, above
The standard stick covered, except for the handle, with white plastic sleeving.

Cat. No. 9497: for men, 36″ £0. 6. 6
Cat. No. 9496: for ladies, 36″ £0. 6. 6

Name: Safety Pointer
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above 3,00 DM
Light metal, yellow with 3 black dots, bell equipped handle.

MEDICAL

Name: Automatic Injector
Source: AFB
Availability: Discontinued in catalog listings
The manufacturers of the Kayden Injector have modified this unit so that it may be used with the Vim Insulin Syringe which is equipped with a Tru Set control. After the syringe has been loaded, the Automatic Injector is "cocked" and the syringe is fitted into place on the injector. The unit is then set down at the site of the injection and a button, located on the side of the injector, is pressed. This action causes the injection to be completed.

Name: Insulin Needle Guide
Source: AFB
Availability: Supplier, above Cat. No. MES102: $.30
Consists of an aluminum trough with a "V" at one end to match the center of the rubber corks in insulin vials. After sterilizing the "V" end of the device the vial is placed at the opposite end of the trough, with the stopper toward the "V." The needle is laid in the "V" and the vial pushed toward it, allowing the needle to penetrate. Since there may be variation in vial dimensions, an empty vial should accompany order, so that guide can be made to fit.

Name: Insulin Needle Guide—SS62
Source: AFB
Availability: Supplier, above Cat. No. MES232: $.45
This guide is made of aluminum and is designed so it fits over the top of the insulin vial. A funnel-shaped opening guides the needle into the rubber cap of the vial. Designed to fit Eli Lilly insulin vials.

Name: Insulin Syringe with Tru Set Control
Source: AFB
Availability: Supplier, above Cat. No. MES101: $4.90
Standard Vim 1 cc insulin syringe of the short type with 40 and 80 unit scales, and a special gauge which can be set by doctor or nurse to permit measuring of insulin without sight. A clip fits the body of the syringe with a slot resembling the inside of a sans serif capital G. A sliding guide clips onto the top of the plunger with arm parallel to the plunger itself. A stop fits the guide and is locked in place by the nurse or physician. The syringe can be taken apart for cleaning without disturbing the setting of the stop.

Name: Syringe
Source: Technische Hogeschool
Availability: Supplier, above $15.00
A syringe which is loaded by tactual sense and is medically approved and very accurate.

MISCELLANY

Name: Cigarette Dispenser
Source: St. Dunstan's, London, England
Availability: Supplier, above
A dispenser holding 25 cigarettes displaces a cigarette into a vertical position when a plunger is pressed. The device incorporates a battery-powered heating element automatically switched on igniting the cigarette as it is exposed. A warning buzzer emits an audible signal when the last cigarette is removed.

Name: Electronic Bill Detector
Source: Automatic Canteen Company of America, Merchandise Mart, Chicago, Illinois
Availability: Supplier, above $275.00
This device, which enables sightless business people to identify $1, $2, $5, $10 and $20 bills, operates by photoelectric methods. The blind user inserts a bill into the small box-like machine and twists a button while holding four fingers over four plunger buttons. The button that pops up identifies the denomination.

POSTAL

Name: Braille Letter Wrappers
Source: RNIB
Availability: Supplier, above
A paper wrapper approved by the G.P.O. for sending braille letters by post. Space is provided for inserting the name and address of both sender and addressee. The wrappers are also available with British postage stamps.

Cat. No. 9120: per 30	£0. 3. 6
Cat. No. 9117: with ½d. stamps	price not listed

Name: Hamilton Platform Postal Scale
Source: AFB
Availability: Supplier, above Cat. No. SCM110: $4.20
Platform springless scale. Adjustment screw for off-level surface. Read by placing flat of finger against stationary pointer when movable dial stops. Dimensions 5¾" high, 5½" broad, and 2½" wide. Platform 2-5/16" x 3-1/8". Single raised dots at each ounce interval; double raised dots at 0, 5, 10, and 15 (16 oz. capacity).

Name: Postage Labels
Source: RNIB
Availability: Supplier, above
Gummed labels approved by the G.P.O. for use when sending embossed literature and articles for the blind by post. They are printed in green with sufficient space for inserting the name and address of sender and addressee. The top left hand corner is cut to indicate the correct way up. The labels can also be supplied with British postage stamps.

Cat. No. 9119: per 100	£0. 1. 3
Cat. No. 9115: 50 labels with ½d. stamps	price not listed
Cat. No. 9116: 50 labels with 1d. stamps	price not listed

Name: Postal Bag
Source: RNIB
Availability: Supplier, above Cat. No. 9118: £0. 5. 0
For posting large size braille volumes. Made from green cotton duck and stenciled "Articles for the Blind." The bag is secured by tying with string threaded through fitted eyelets.

Name: Postal Case
Source: RNIB
Availability: Supplier, above Cat. No. 9368: £0. 2. 9
A strong cardboard box for sending braille book manuscripts through the mail at concession rates. Capacity 80 large brailled sheets.

Name: Postal Case
Source: RNIB
Availability: Supplier, above Cat. No. 9286: £0. 17. 3
A reinforced fiber case for sending braille book manuscripts through the mail at concession rates for literature for the blind and without extra packing. Fitted with hinge lid and strap. Capacity 80 large size brailled sheets.

READING MACHINE SYSTEMS AND COMPONENTS OF SYSTEMS

Name: A-2 Reader
Source: L. E. Flory/Radio Corporation of America
Availability: Experimental prototype—1947 (discontinued)
A spot of light from a probe moved at a vertical scanning rate of 30 lines/second. The output was a tone varying between 400 cps and 4 kc. Speed and comprehension were quite poor.

Name: Audible Spelled Output Device
Source: E. L. Davis and O. T. Hinton
Availability: Experimental prototype—1950
A method in which the total amount of "black" in a letter controlled the position of a light pencil illuminating an appropriately placed motion-picture-type sound track of the name for the specific letter, the sound then being reproduced by usual photoelectric methods. Omission of the information contained in spatial distribution of ink greatly limits the number of symbols which can be discriminated reliably.

Name: Autophone
Source: S. Pantages and E. N. Pantazis
Availability: Experimental prototype (discontinued)
This device is a reading machine system related to the "tonal braille" of Frank, requiring specially prepared punched material.

Name: Battelle Reader
Source: Coffey/Battelle Memorial Institute, Columbus, Ohio
Availability: Production prototype; to be field tested
This reading machine is a highly refined version of the Optophone with several mechanical and electrical improvements in reliability, flexibility, and ruggedness. The present device, incorporating line guides, type font adjustments, ruggedized electronics, is currently undergoing tests in a continuous and intensive training program to assess its usefulness to blind individuals. The device is not available for sale to the public.

Name: Braille Belt Reader
Source: R. Mann, MIT, Cambridge, Massachusetts
Availability: Experimental prototype—1962
Punched paper tape, used as an information-storage medium, is utilized in a tactile transducer equipped with hemispherical-head pin elements which are positioned by the tape to correspond to the encoded braille symbol. The presentation is one line at a time, and the tape feeds from left to right. The text is advanced one line at a time by a lever. A second version of this device gives a continuous presentation of the text with a span of a line in length.

Name: Braille Belt Reader
Source: R. Mann, MIT, Cambridge, Massachusetts
Availability: Experimental prototype—1962
Another in a series of punched paper tape to braille symbol transducers produced by the Sensory Aids group. In this version, a direct mechanical tape to braille output is

achieved by carrying small ball bearings entrained in the holes of the punched paper tape across the presentation space. The motion of the tape strips ball bearings from a hopper. The balls are restrained and the tape is supported at the equator of the balls by grooves in a magnetized supporting plate. A receiver and vibrator return the balls to a supply hopper.

Name: Braille Belt Reader
Source: R. Mann, MIT, Cambridge, Massachusetts
Availability: Experimental prototype—1962
Still another punched paper tape to braille transducer produced by the Sensory Aids group. Here, tufted or flocked textile fabric is arranged so that fibers extend through holes in the punched tape, thus providing tactile stimulation. The operation is otherwise the same as the other models in this series (q.v.).

Name: Braille Belt Reader
Source: R. Mann, MIT, Cambridge, Massachusetts
Availability: Experimental prototype—1962
This device, the fourth and final in the current series of variations on the punched paper tape to braille symbol transducers, uses a jet of compressed air as the stimulus for detection of the signal to the fingers of the blind reader. The punched paper tape serves simply as the pneumatic valve controlling the jet of air. Tape advance can be achieved by lever or motor, for line at a time or for continuous display of text.

Name: IBM Braille Belt Reader
Source: John Wheeler, IBM, Endicott, New York
Availability: Experimental prototype (discontinued)
Specially prepared 6-hole coded paper tape produces an output to a moving plastic belt in which small poke probes are raised above the level of the belt by electromechanical means. One line of braille is presented at a time. The speed of reading is variable; the highest is 125 wpm of Grade 2 braille. The machine is noisy; the input must be specially prepared; its reliability is unproved.

Name: Indicia Recognition Machine
Source: L. E. Flory and W. S. Pike
Availability: Experimental prototype—1952
An apparatus for indicia recognition which scans the letters in eight horizontal bands. The pulse configuration in these bands, as the black portions of the letters are encountered, are tallied and recognized in a selector matrix which then controls production of any one of 26 prerecorded sounds. The names of the letters are stored on magnetic loops in the sound reproducer section.

Name: Optophone
Source: Dr. Fournier d'Albe/Barc and Strand
Availability: Production prototype
This machine is a photocell and lens system designed to scan a black and white pattern constituting a printed line, and producing as output characteristic sounds or analogous tactile information. There is a narrow vertical slit which scans the text from left to right and a non-integrating, direct translation type of reader.

Name: Optophone-type Reading Machine
Source: Abrams, California
Availability: Experimental prototype—1950 (discontinued)
This machine, designed as a portable reading machine for the blind, is based on the optical probe-audible output class of devices resembling the Optophone. The modifications in this machine consist of the form of the scan, and the type of output from the oscillator characteristic of the type of scan. The scan beam sweeps upward from

below the individual letters in a line of print and triggers a variable oscillator. The oscillator is synchronized with the linear movement of the probe in such a way that a dark spot on the page (i.e., the occurrence of inkprint at any point) always triggers a tone at approximately the same pitch. The sound output resembles the chattering of a rather unpleasant bird's voice. No data are available on the successful use of the device or on other aspects of its performance (reliability, cost, construction type, etc.).

Name: Optophone-type Reading Machine
Source: Henke, Pomona College, Claremont, California/Research Corporation
Availability: Experimental prototype
This device is mounted on a typewriter. The over-all reading rate is limited largely by time lost during repeated backspacing and checking but substantial speeds can be attained by using the context within a phrase or sentence.

Name: R.C.A. Recognition Machine
Source: Radio Corporation of America
Availability: Experimental prototype—1944-1947 (discontinued)
The machine was designed to read typewritten letters by photohead. A function matrix decided the letter to be selected from the storage drum. The output was a prerecorded human voice spelling the words letter by letter. Reading rate was 60 wpm (5 letter words).

Name: R.C.A. Reading Aid
Source: G. A. Morton and L. E. Flory, Radio Corporation of America
Availability: Experimental prototype
This device is a simple design with only two or three channels for successively higher positions on a letter. The scanning probe, shaped like a fountain pen, contained a lamp, the photocells, and methyl methacrylate "light pipes." Several oscillators could each vary in frequency, depending upon the light received by their respective photocells. Alternatively, the light could change the intensity of fixed-frequency oscillators.

Name: Reading Machine
Source: Curtis M. Surber, Wichita Falls, Texas
Availability: Experimental prototype
This invention relates to devices to enable blind persons to read directly printed type, written script, or other symbols without the use of braille or similar techniques. A main object is to provide an improved electrical apparatus enabling a standard printed page or other written material to be scanned and reproduced in a manner enabling a blind person to tactually read the scanned material. A further object is to provide an improved reading and writing device which enables the blind to mechanically sense the symbols which he writes and accurately guide the hand in writing. The device is built on a light source/photocell receptor grid, similar to the Optophone and the Battelle Reader (q.v.). A frame is used to hold the inkprint text, and a tactile stimulator grid is available for use by the deaf-blind.

Name: Reading Machine for the Blind—Optophone Type
Source: Institute of Defectology
Availability: Currently under test in schools for the blind
This reader has both an acoustic and a tactile output. The text to be read is placed in a movable holder which is pressed against a glass cover (to hold it flat). The optical probe unit, containing eight light-sensitive photocells, is moved over a line of text to be read by utilizing a motor drive. The audible output is like that of the Optophone, i.e., a combination of one to eight tones which vary in duration and pitch combinations to produce a code characteristic of each inkprint letter. The tactile output utilizes a coding of metal pins protruding from a block in which each combination of pins is characteristic of the inkprint letter.

Name: Schutkowski System
Source: G. Schutkowski, Germany
Availability: Experimental prototype—1930 (discontinued)
The device consists of a stencil-recognition scheme adaptable to any known type font.

Name: Sell Device
Source: W. O. Sell
Availability: Experimental prototype—1943
This device focused an image of an object placed in its field on a matrix array of photocells which controlled a similar array of points to give electrical stimulation to the skin. Developed under Veterans Administration contract.

Name: Sharples Apparatus
Source: A. R. Sharples
Availability: Experimental prototype—1941
The image of type being read was matched against a stored alphabet stencil. When a match for the letter was indicated, a sound from an appropriate sound track in some remote storage device was produced. Such systems either require precise alignment or sacrifice operating speed to allow systematic "jittering" of the image over the stencil in an effort to obtain perfect alignment.

Name: Snook Apparatus
Source: H. C. Snook
Availability: Experimental prototype—1932
An apparatus designed to enable the blind to read. The device scanned the print by a mechanical-optical means and used the output of a photocell to produce a tangible replica by controlling solenoid-driven plungers. Developed under Veterans Administration contract.

Name: Synthetic Speech Generator
Source: Haskins Laboratories, New York, New York/Mauch Laboratory, Dayton, Ohio
Availability: Experimental prototype
The device is a word synthesizer which is equipped with magnetic tape fragments containing prerecorded "spelled speech" letters. This model can compose whole words up to 15 letters long and can read them out at rates up to 8 letters per second. The scanning array of photocells can recognize all lower case letters of the alphabet. Further plans include the completion and evaluation of the basic prototype reading machine, and work on an advanced prototype word synthesizer having a character inventory including the alphabet, numerals, and selected symbols.

Name: Synthetic Speech Generator
Source: Haskins Laboratories, New York, New York/Mauch Laboratory, Dayton, Ohio
Availability: Experimental prototype—(discontinued)
Movie film contains texts as a series of transparent letters on opaque background. A projector moves this film past an adjustable width slip. The image is projected onto 5 photocells which, in turn, actuate a relay-amplifier to produce a sound. The sounds are generated fast enough to resemble a kind of coded English. The tones are not single (as with the Octophone), but resemble speech, though it is not intelligible without training and practice.

Name: Teletype-Tape to Spoken Word Converter
Source: Haskins Laboratories, New York, New York
Availability: Experimental prototype—(discontinued)
An 8-punch coded paper tape (e.g., Monotype) is read and words taken whole, after which the machine refers to memory to read out a prerecorded voice saying the word.

Total stored memory is 600 words. When memory does not have the word, reference is to stored letter-by-letter spelling of the word at the output. Reading speed is 120 wpm, which can be increased. The device might be used as a large library machine from which low cost magnetic types of output could be made.

Name: Zuk Reader
Source: G. H. Zuk
Availability: Experimental prototype—1959
The Zuk reader required punching a message in the desired braille code into a broad paper tape. A system of pins operated by levers rendered the message tangible. An early demonstration model showed the possibility of displaying a line of braille at a time. Developed under Veterans Administration contract.

TALKING BOOK AND OTHER SOUND EQUIPMENT

Name: Acoustic Modulation Level Indicator
Source: Technische Hogeschool
Availability: Experimental prototype
A photocell device designed to fit over the modulation level indicator of tape recorders which transforms the intensity of the "magic eye" into an acoustic signal.

Name: APH Talking Book Reproducer Model LX
Source: APH
Availability: Supplier, above $60.00
The machine is electrically driven and geared for 2 speeds—16⅔ and 33⅓ rpm. Dual sapphire needle cartridge will play both old type wide-grooved records and new microgroove records. It is a portable model and the speaker is mounted in the cover. Earphones are available.

Name: Binaural Earphone Kit
Source: AFB
Availability: Supplier, above Cat. No. MC221: $4.80
Lightweight, plastic enclosed earphones. Low impedance (8 to 15 ohms) which closely match the amplifier output circuit in Talking Book Reproducers. Equipped with a phone plug and 9′ connecting wire. Delay in transmitting sound to other ear creates a kind of "binaural" effect.

Name: Compact Record Player
Source: AFB
Availability: Experimental prototype (discontinued)
The machine is 5″ x 8″ x 9″ in size, plays 7-inch records at 8⅓ rpm, and uses a visions damped arm.

Name: End-of-Tape Signaling Device
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
Contact with the tape and a reel is made by a roller bearing at the end of a pivoted arm with a pressure of ½ oz by a clock spring. The arm is calibrated for setting to 2-, 5-, and 7-inch reels. The roller arm is calibrated by bringing it to within ⅛″ of the hub of an empty spool. A full reel is then put in the place of the empty reel and the roller rides the tape as the recording is being made. When ⅛″ tape remains on the spool a microswitch closes a battery/buzzer alarm.

Name: Filmagraphone
Source: C. M. Nolte, Sevres (Seine et Oise), France
Availability: Experimental prototype, 1960, status unknown About $2500 (prototype); about $25 (production model)
This device is based on several pre-World War II patents from several countries concerning reduction techniques on film. It uses letter characters in soundtrack form on optical film wound on reels. Such films, of very long life and archival quality, can be wound 300 meters to a reel in a pocket-sized container and could be made for less than 50 cents. Patents registered since the war would permit certain improvements in the device which is of a size comparable to a small table model AM radio receiver. The improvements would permit the recording of 20 hours of reading onto a 300-meter reel at a price of 12½ cents per reel.

Name: Headphones
Source: AFB
Availability: Supplier, above Cat. No. MC222: $6.00
Trimm Commercial featherweight magnetic headphones, 3000 ohms, with adjustable two-strap plastic covered headbands. Phones measure 2¼″ in diameter by ½″ thick and weigh, complete, only 6 ozs. Good volume when used with Talking Book Reproducer. Equipped with plug.

Name: Linear Tracking Pickup and AC Operated Reproducer
Source: AFB
Availability: Experimental prototype (discontinued)
A Talking Book Reproducer containing a linear pickup affixed to the under-side of the lid in such a manner as to automatically position itself at the start of records of various sizes by manipulation of a simple starting guide.

Name: Recording Level Indicator
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
This device uses a transistorized audio frequency oscillator and a second transistor connected as an unbypassed emitter resistor. The instrument is silent until some predetermined voltage is reached whereupon the oscillator sounds an alarm to tell the recording operator that volume level is too high.

Name: Recording Level Indicator
Source: National Research Council of Canada, Radio and Electrical Engineering Division
Availability: Experimental prototype
A simple audio frequency blocking oscillator whose frequency is controlled by the changes in resistance of a cadmium selenide photocell, is mounted above the magic eye level indicator on a tape recorder. The photocell is placed close to the eye and the pitch of the oscillation heard in the earphone transducer changes as the recording level changes. The device is not exact and requires a certain degree of skill in use.

Name: Recording Level Indicator
Source: National Research Council of Canada, Radio and Electrical Engineering Division
Availability: Experimental prototype
A standard level indicator having two pointers, one of which is manually preset the other of which indicates actual level, is adapted by permitting contact between the two pointers through any desired external circuit.

Name: Recording Level Indicator
Source: National Research Council of Canada, Radio and Electrical Engineering Division
Availability: Experimental prototype
In this device a tactile output indicator is substituted for audible output indication in order that recordings made in the same room will not be effected. The output device is simply a small plunger driven by a solenoid. It is connected as the load in a simple transistorized dc amplifier which is controlled by a transistorized univibrator. The circuit is biased to operate only when signals provided by the tape recorder output monitor jack exceed some preset level. The plunger remains up for half second after the device has been triggered.

Name: Recording Level Indicator
Source: National Research Council of Canada, Radio and Electrical Engineering Division
Availability: Experimental prototype
A voltage sensitive oscillator based on a special form of transistorized blocking af oscillator utilizes a rectified audio frequency voltage derived from the monitor output of a tape recorder. This rectified monitor voltage is applied to one of the input terminals and a calibrated dc bias voltage applied to the other input. The device may be set to trigger or oscillate at any preset recording level. This device gives a very precise indication of peak recording level and in experimental use the gain control can be set to within 2 or 3% of any predetermined value.

Name: Taben D-15-1 Duplicator
Source: Taben Recordings, Box 224, Ardmore, Pennsylvania
Availability: Supplier, above
A magnetic tape duplicator which has four controls (2 volume level knobs and 2 start-stop levers), records 2 tracks simultaneously and has a cross-talk ratio permitting duplication of both stereo and twin-track tapes. It has a simple loading and unloading process, handles reels up to 7″ in diameter, and will duplicate a three-hour, 3¾ in./sec tape in 23 minutes.

Name: Tape Splicer
Source: Technische Hogeschool
Availability: Supplier, above $12.00
This instrument, designed especially for the blind makes perfect repairs and can be handled easily. It does not use sharp knives and there are no loose parts to be lost.

Name: Tape Supply Indicator
Source: National Research Council of Canada, Radio and Electrical Engineering Division
Availability: Experimental prototype
A clock dial counter, Type CTA, (Wright and Weaire, Ltd., England) is adapted with a set of braille dots around the face. The glass is removed to permit feeling the position of the two hands on the clock dial indicator.

Name: Tape Supply Indicator
Source: National Research Council of Canada, Radio and Electrical Engineering Division
Availability: Experimental prototype
A light metal arm is held in contact with tape on a reel by spring tension. The arm rotates on a rod mounted to the recorder deck and the end of the arm is shaped like a cam. A second arm, mounted on another rod on the tape deck, has its end riding

against the cam while the other end carries a pointer moving along a braille scale. The cam is so shaped that there is a linear relation between the number of feet of tape on the reel and the reading on the braille scale. Total tape length display requires a 4″ length of braille scale.

Name: Tefifon—Tape Player
Source: Tefi-apparatebau/Cleveland Lane/AFB
Availability: Experimental prototype (discontinued)
In the Tefifon sound was recorded as on a disc by an embossing stylus on a continuous length of tape mounted in a cassette with a maximum capacity of 60 minutes playing time. Further developments in the tape and disc arts forced the discontinuance of the development of this device.

Name: Transistor-Powered, Spring-Driven Talking Book Reproducer
Source: Library of Congress, Washington, D. C.
Availability: Supplier, above
A Standard Talking Book Reproducer has been adapted for use in rural areas where electric power supply is not available from lines by installing a battery-powered transistorized amplifier and a hand-wound spring motor drive for the turntable.
An earlier model, completely battery operated, has been discontinued.

Name: TV Audio Receiver
Source: AFB
Availability: Supplier, above Cat. No. MS230: $67.10
Seven-tube, 12-Channel VHF Band with raised dots to indicate channel location. Provided with output jack for headphones or amplifier and input jack for connecting FM tuner. Volume and tone controls. Operates on 100 to 120 volts ac only. Attractive, brown leatherette case. Size: 11½″ long x 6½″ wide x 5⅝″ high. Weight 11 lbs.

WATCHES—(ALPHABETICAL BY SUPPLIER)

Name: Baylor Braille Wrist Watch
Source: AFB
Availability: Supplier, above $8.95
Seventeen-jewel watch in all chrome case. Expansion band included, guaranteed for three years. Men's and ladies' sizes.

Name: Lady's 14 Karat Gold Wrist Watch
Source: AFB
Availability: Supplier, above Cat. No. CM22: $43.80
Same as CM21, except 21-jewel, with gold-filled expansion band. Attractively boxed.

Name: Lady's Self-Winding Wrist Watch
Source: AFB
Availability: Supplier, above Cat. No. CM23: $27.60
Same as CM21, except the case is 1″ in diameter and 7/16″ thick, boxed.

Name: Lady's Wrist Watch
Source: AFB
Availability: Supplier, above
Bennett Brothers 17-jewel, antimagnetic, shock-resistant Swiss movement in size 8¾ (slightly larger than a nickel). Stainless steel back. Unbreakable mainspring. Case 1″

in diameter, 5/16″ thick, weight ⅝ oz. Inkprint dial has two raised dots at 12, and single raised dots at remaining hours; 3 o'clock at stem. Button for spring cover located at 6 o'clock, above wrist band.

Cat. No. CM19: Gold electroplated case, black suede wrist band $15.85
Cat. No. CM20: Chrome case with leather wrist band $12.90

Name: Lady's Wrist Watch
Source: AFB
Availability: Supplier, above Cat. No. CM21: $17.90
Gotham 17-jewel antimagnetic, shock-resistant Swiss movement in size 8¾ (slightly larger than a nickel). Gold electroplated case with transparent plastic crystal. Stainless steel back. Unbreakable mainspring. Leather wrist band. Case 1″ diameter, 5/16″ thick. Weight ¾ ounce. Inkprint dial has two raised dots at 12 and single raised dots at remaining hours. Button for spring cover located in stem at 3 o'clock.

Name: Man's Sturdy Baylor Braille Pocket Watch
Source: AFB
Availability: Supplier, above $8.95
Seventeen-jewel. Chrome case. Guaranteed for 3 years.

Name: Man's 14 Karat Gold Wrist Watch
Source: AFB
Availability: Supplier, above Cat. No. CM10: $64.35
Same as CM8 (Man's Wrist Watch) except case is ⅜″ thick and button for spring cover is located in stem at 3 o'clock. Gold-filled expansion band. Attractively boxed.

Name: Man's 14 Karat Gold Wrist Watch
Source: AFB
Availability: Supplier, above Cat. No. CM14: $63.95
Same as CM12 (Man's Wrist Watch) except 21-jewel and case is approx. ⅜″ thick, with gold-filled expansion band. Attractively boxed.

Name: Man's Pocket Watch
Source: AFB
Availability: Supplier, above Cat. No. CM16: $13.75
Bennett Brothers 17-jewel antimagnetic shock-resistant in size 17 (about the size of a silver dollar). Nickel-chrome hunting case 1⅞″ in diameter, 7/16″ thick. Weight 2½ ounces. Inkprint dial has 3 raised dots at 12; double raised dots at 3, 6, and 9. Single raised dots at remaining hours. Button for spring cover located in stem at 3 o'clock.

Name: Man's Pocket Watch
Source: AFB
Availability: Supplier, above
Gotham 17-jewel, antimagnetic, shock-resistant in size 17. Inkprint dial has 3 raised dots at 12; double raised dots at 3, 6, and 9 and single raised dots at remaining hours. Spring cover button in stem at 3 o'clock. Size 1⅞″ in diameter, ⅜″ thick, weight 2 oz.

Cat. No. CM17: Nickel-chrome, engine-turned hunting case $15.00
Cat. No. CM18: Gold electroplated case $23.40

Name: Man's Self-Winding Wrist Watch
Source: AFB
Availability: Supplier, above Cat. No. CM11: $24.65
Same as CM8 (Man's Wrist Watch) except case is 1⅜″ in diameter and 9/16″ thick. Size 11½ ligne. Leather band, boxed.

Name: Man's Self-Winding Wrist Watch
Source: AFB
Availability: Supplier, above Cat. No. CM15: $25.35
Same as CM12 (Man's Wrist Watch) except case is 1-5/16″ in diameter and approx. ½″ thick. Leather band, boxed.

Name: Movado Compact Watch
Source: AFB
Availability: Supplier, above Cat. No. CM24: $44.30
Seventeen-jewel Swiss movement, in pocket case covered with alligator leather. Case slides apart to disclose watch face, and winds watch in process of opening and closing. Rectangular face has double raised dots at 12, 3, 6, and 9, and single dots at remaining hours. No inkprint numerals.

Name: Man's Wrist Watch
Source: AFB
Availability: Supplier, above
Bennett Brothers 17-jewel, antimagnetic, shock-resistant Swiss movement in size 10½ (slightly larger than a quarter). Stainless steel back. Unbreakable mainspring. Case 1-3/16″ in diameter, 5/16″ thick, weight ¾ oz. Inkprint dial has 3 raised dots at 12 and double raised dots at 3, 6, and 9. Single raised dots at remaining hours, 3 o'clock at stem. Button for spring cover located at 6 o'clock, above wrist band. (Suitable for ladies.)

Cat. No. CM8: Gold electroplate case, natural pigskin wrist band $15.85
Cat. No. CM9: Chrome case, leather wrist band in gray only $12.35

Name: Man's Wrist Watch
Source: AFB
Availability: Supplier, above
Gotham 17-jewel, antimagnetic, shock-resistant Swiss movement in size 10½ (slightly larger than a quarter). Stainless steel back. Unbreakable mainspring. Case 1-3/16″ in diameter and 5/16″ thick. Weight 1¼ oz. Inkprint dial has 3 raised dots at 12; double raised dots at 3, 6, and 9, and single raised dots at remaining hours. Button for spring cover in stem at 3 o'clock.

Cat. No. CM12: Gold electroplated case, leather wrist band $17.90
Cat. No. CM13: Chrome case, leather wrist band in gray only $14.85

Name: Watches
Source: Blindenstudienanstalt Marburg/Lahn
Availability: Supplier, above
Pocket Watch: 15-jewel, white metal housing, chromed, lever action, spring lid 68,50 DM
Ladies wrist watch: 15-jewel, Swiss made, chrome housing with plexiglass, 25 mm in diameter 59,50 DM
Mens wrist watch: Same model as ladies 59,50 DM

Name: Watches
Source: Lighthouse, Welfare Center for the Blind
Availability: Meijitsu-do
For gentlemen 4500 to 6000 yen
For ladies 5000 to 6000 yen

Name: Pocket Watch
Source: RNIB
Availability: Supplier, above. Overseas customers should order direct from the Reconvilier Watch Company, Reconvilier, Switzerland

Cat. No. 9191: Price not listed

A full size metal hunter watch with dial protected by a hinged cover which opens when winding knob is depressed. Fitted with a 15-jewel movement and strengthened hands. The enamelled dial has 3 dots at 12, 2 dots at 3, 6, 9, and a single dot at the other hour positions. Engine-turned, chrome-nickel case. Swiss made.

Name: Pocket Watch—Pulse Timing
Source: RNIB
Availability: Supplier, above Cat. No. 9192: Price not listed

Similar to Cat. No. 9191 pocket watch but in addition it is fitted with a device which emits a faint sound every 15 seconds. It has been specially designed for use by blind physiotherapists.

Name: Wrist Watches
Source: RNIB
Availability: Supplier, above

Each of these watches has the appearance of an ordinary wrist watch, the front cover being fitted with a transparent center. Nickel-chrome stainless steel back and press-piece for opening the spring cover. Strengthened hands, enamelled dial with 2 dots at the 3, 6, 9, and 12 positions and a single dot at the other hours. Supplied with a leather strap.

Cat. No. 9373 Price not listed

17-jewel Swiss movement, 1-3/16 inches in diameter. Overseas customers should order direct from The Cyma Watch Company, La Chaux de Fonds, Switzerland.

Cat. No. 9370 £4. 15. 0

15-jewel English movement, 1-5/16 inches in diameter

Cat. No. 9372 Price not listed

15-jewel Swiss movement, 1¼ inches in diameter. Overseas customers should order direct from Timor Watch Company, P. O. Box 92, Morat, Switzerland.

Cat. No. 9386 Price not listed

15-jewel Swiss movement, 15/16 inches in diameter, suitable only for people with a very keen sense of touch. Overseas customers should order direct from Timor Watch Company, P. O. Box 92, Morat, Switzerland.

Name: Repeater Watch and Clock for Multiple Handicapped
Source: St. Dunstan's, London, England
Availability: Supplier, above

On depressing a plunger the time is indicated by chimes. Spring damping is provided between the plastic operating plunger and the watch mechanism to prevent inadevertent damage to the instrument. The pocket version weighs 7 oz.

Name: Watches
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

Man's pocket watch, 50 mm in diameter, white metal housing	62,00 DM
Man's wrist watch, 33 mm in diameter, 15 jewels, chrome metal housing	62,00 DM
Man's wrist watch, 33 mm in diameter, 15 jewels, gold plated housing	70,00 DM

Man's wrist watch, 33 mm in diameter, Swiss works, chrome housing 68,00 DM
Man's wrist watch, 33 mm in diameter, 15 jewels, double-sided housing 76,00 DM

Name: Watches
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above
Woman's wrist watch, 26 mm in diameter, 15 jewels, chrome housing 72,00 DM
Woman's wrist watch, 26 mm in diameter, 15 jewels, gold plated 75,00 DM
Woman's wrist watch, 26 mm in diameter, 15 jewels, Swiss works, chrome, double-sided housing 80,00 DM

WRITING

Braillewriters

It is the understanding of the staff at AFB that there exists a factory in Dehra Dun (India) which manufactures braillewriters. Similar manufacturing facilities are said to exist in Taipei (Taiwan). No other information was available to us at the time that these listings were prepared and we hope that this gap can be filled in a later edition of this catalog.

Name: Andersson and Sørensen Writer
Source: Beutler Company, 457 Broadway, New York, New York
Availability: Supplier, above
This machine is produced in Copenhagen, Denmark. Standard 11½" wide paper is used. The writer weighs 7¼ pounds.

Name: Atkinson Portable Braillewriter
Source: Braille Institute of America
Availability: Production discontinued Cost was approximately $96.00
All the standard features were embodied in this machine. The paper used was 12-inches wide and remained flat during brailling. A carrying case was an integral part of the writer, serving as its base.

Name: Banks Pocket Writer #6
Source: Dr. Alfred Banks, San Diego, California/IBM
Availability: Lions Clubs throughout U.S.A.
This writer used tape measuring ½" wide and the whole machine measured 4½" in width and 7" in length, truly a "pocket writer."

Name: Boston Braillewriter
Source: Howe Press of Perkins School for the Blind
Availability: circ. 1910 (discontinued)
This machine had one innovation, the first self-operating carriage feeding mechanism. It also introduced a carriage release lever located in front of the machine. The writer used flat, eleven-inch paper which was fed through two rubber rollers into a slot in the largest roller.

Name: Braillewriter
Source: Data not available
Availability: Date unknown (discontinued)
This machine is manually operated. Its only means of power coupling is a ratchet

feeding arrangement. The braille produced has six vertical dots in a single line ⅜" high. There is only one paper feed knob and the paper is rolled round a hollow tube.

Name: Braillewriter
Source: Lighthouse, Welfare Center for the Blind
Availability: Guzei-sha 7000 yen
Thirty-two cells; writes on both sides of the paper.

Name: Daisy Point Writer
Source: Howe Press of Perkins School for the Blind
Availability: circ. 1865 (discontinued)
The name of this device is attributed to the daisy-like effect created by the cluster of keys on the embossing carriage. Line spacing and cell spacing were both performed by freehand movement. On the right side of the frame a notched rod passed from top to bottom to allow for accurate line spacing. Nine by 11" paper was inserted by lifting the frame containing the daisy head and guide rods. The matrix was composed of padding covered by cloth.

Name: "Foundation Writer"
Source: AFB
Availability: Supplier, above—from 1933 to 1947
This writer was manufactured by the L. C. Smith Typewriter Company for the American Foundation for the Blind. Replacement parts are still available.

Name: German Pocket Writer
Source: Germany
Availability: circ. 1890 (discontinued)
This writer was portable and used paper tape. There were four separate positions for producing cell spacing.

Name: Hall Writer
Source: Frank Hall/Illinois School for the Blind, Jacksonville, Illinois
Availability: circ. 1892 (discontinued)
The device used 11" paper which was inserted from the rear after passing between two rubber-covered feed rollers. The paper was then stored in a hollow drum.

Name: Improved Daisy Point Writer
Source: Howe Press of Perkins School for the Blind
Availability: circ. 1880 (discontinued)
This is an improved version of the Daisy writer with the following changes: A paper feeding mechanism; detent system for uniform spacing of each line; individual cell spacing accomplished by moving the embossing head from cell to cell.

Name: Japanese Braille Writer
Source: AFB
Availability: Supplier, above Cat. No. BS6: $26.90
Dots 1, 2, and 3 under ring, middle, and index fingers of right hand. Dots 4, 5, and 6 similarly located for the left hand. Takes paper only up to 7¾" wide but of any length. Braille can be checked by pulling out catch to left of transport mechanism. Size: 11¾" long x 3⅝" high x 4⅛" wide. Weight: 3 lbs, 11 oz.

Name: Jauny Braillewriter
Source: American Foundation for Overseas Blind, Paris, France
Availability: Supplier, above
The unusual length of the carriage (21" long and 8" wide) permits the use of 14" wide paper. A knob on the left side of the machine controls the storage of paper. The

paper is wound around a solid steel rod. A knob on the right side of the machine controls the advance of the paper for individual line spacing and functions independently of the paper storage knob. The carriage is completely self-contained, including keys, stylus assembly, embossing die, and bell.

Name: Kleidograph
Source: New York Institute for the Blind, New York
Availability: circ. 1894 (discontinued)
This machine writes only New York Point braille. A cluster of 12 keys and a cell spacer made up the keyboard. Paper was inserted from the rear and rolled around a drum. By moving a lever at the left of the drum to a forward position, the paper was automatically advanced at the end of each line.

Name: The Lavender Braillewriter
Source: APH
Availability: Supplier, above
This writer embosses 40 cells of braille on paper 11½" wide. The paper is allowed to exit through an opening in the cover somewhat similar to a conventional typewriter. Paper of any length may be used including a continuous roll.

Name: Marburg Braillewriter
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
This machine is essentially an up-to-date version of the earlier Picht writer. It will accommodate sheets of paper up to 11 inches in width with a maximum of 41 cells per line. A back space lever is provided on the right side of the keyboard and a carriage release lever is located on the top of the frame. Paper must be fed into the machine by turning the roller knobs at either end of the paper roller. Right and left margin stops are provided; the right margin stop rings a bell four spaces before the end of the line. A 2¼ inch tray anchored at the back of the carriage is raised when the machine is in operation, providing a reading platform. The keyboard comprises six keys and a space bar. The machine is bolted to a 15 x 10½ inch baseboard, and stands 5¾ inches high when in operation. Each machine is supplied with a black fabrikoid covered wooden case. The writer and case weigh 14 pounds.
NOTE: Due to the method used to insert the paper into the machine, it is not suitable for use in volunteer transcribing work.

Name: Marburg Braillewriter—Interline Type
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
This machine can be equipped with the following:

1. A keyboard with which one can type with both hands;
2. A keyboard with which one can type with one as well as with both hands (right and left hand respectively—exchange of points 2 and 5 respectively with empty spaces);
3. A keyboard for those with injured hands who can only write with two or three fingers;
4. A keyboard for those with injured hands with poor tactile sense (enlarged markings).

Name: Minerva
Source: Introduced in Germany
Availability: circ. 1900 (discontinued)
This device was a very small adaptation of the conventional writing machine. It incorporated the conventional keyboard and was called a pocket braillewriter. The paper used was 5" wide, was fed into the writer between two rubber rollers, and was stored inside the stationary hollow drum.

Name: New Hall Braillewriter
Source: APH
Availability: Supplier, above $65.00
The New Hall Braillewriter produces standard size braille. Only the long-carriage model is available which accommodates a 11½" width page with 41 cells to the line. Paper is wrapped around a central wooden roller and held in place by a rubber traction roller. The keyboard is the same as that for all braillewriters.

Name: Perkins Brailler
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above
This machine was designed and developed in 1951. The carriage carries the styli rather than the paper. Information about the features of the Perkins Brailler is available in both inkprint and braille from the Howe Press of the Perkins School for the Blind.

Name: Perkins Braillewriter
Source: Howe Press of Perkins School for the Blind
Availability: circ. 1900 (discontinued)
This machine had a conventional keyboard and a spacing key. It was equipped with two feed knobs and line spacing levers. There were right and left margin stops and a bell alerted the operator when the end of a line was reached.

Name: Perkins Braillewriter (Model B)
Source: Howe Press of Perkins School for the Blind
Availability: circ. 1920 (discontinued)
This writer contained the following changes from earlier models: a line spacing lever, a back spacing lever, a cell spacer key which replaced the full length keyboard lever, and margin stops.

Name: Perkins Unimanual Brailler
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above
This machine is a special model of the Perkins Brailler designed primarily for persons limited by disability to the use of one hand.

Name: Perkins Writing Machine
Source: Howe Press of Perkins School for the Blind
Availability: circ. 1905 (discontinued)
This writer incorporated a few of the now standard features of all braillewriters—space bar assembly; paper feed knobs on both sides of the machine; rapid traverse carriage release lever; and the conventional keyboard.

Name: Picht Braillewriter
Source: Oskar Picht/Provincial School for the Blind, Bromberg, Germany
Availability: circ. 1900 (discontinued)
This machine was invented by Oskar Picht about 1900. Nine-inch wide paper was used and the paper was stored around a solid wooden drum. The face of each key had a full braille cell with one large dot emphasizing the correct key number.

Name: Pocket Braillewriter
Source: Charles H. Elkan, Chicago, Illinois
Availability: Experimental prototype, 1961 Production cost—$15-$20
A miniature pocket braillewriter of very compact dimensions and very light weight exists in experimental prototype form. It can be operated with one hand. No other details are available.

Name: Portable Braillewriter
Source: Technische Hogeschool
Availability: Experimental prototype
This machine fits easily into a pocket. It uses paper rolls about three inches wide and writes a few words on each line making it suitable for short notes.

Name: Punctograph
Source: Introduced in Louisville, Kentucky
Availability: circ. 1885 (discontinued)
This machine was one of the earliest upward writing devices. Uniform line and cell spacing could be obtained by a combination metal carrier and detent system. A wooden pulley moved the embossing carriage from left to right. Braille was produced when the hollow styli forced the paper onto the braille matrix which was composed of a copper strip attached to the base. Maximum size paper used was 9″ x 11″.

Name: Pyke Glauser Braillewriter (Model PG55)
Source: RNIB
Availability: circ. 1920 (discontinued)
This machine is powered by a flat clock spring. It will write 36 cells of braille. Paper is fed downward from the rear of the machine and secured between paper clamps brought forward line by line as required. The pins of the paper clamp fit into visible holes in the metal table and provide accurate spacing for each line. Interpointing is possible by turning the paper over while it is still secured in the clamp. The writer has no paper feed rollers; the only movement is that of the carriage which moves from left to right.

Name: Pyke Upward Braille Writing Machine
Source: RNIB
Availability: Supplier, above Cat. No. 9002: £47. 0. 0
The machine is of light alloy and plastic construction and is mounted on a base that forms part of the plastic covered carrying case. It is designed so that the braille dots appear on the upper surface of the paper enabling the braille to be read as soon as it is written. It provides for interlining and interpointing braille, the changeover from one system to the other effected by means of a lever. The keys and paper remain stationary when writing and the paper is kept flat. A safety device is provided to prevent the paper being fed through unless it is properly aligned and it also enables the paper to be accurately re-inserted for corrections. A binding margin is made automatically by means of adjustable margin stops. A bell subsitute warning device for deaf users will be available as an optional extra.

Name: St. Dunstan's Braillewriter
Source: Redwing, Ltd., Croyden, England
Availability: Data unknown (discontinued)
This machine has many of the features found in modern writers. Among these are the following: a backspacing lever located at the right-hand side of the machine; a lever which allows for speedy return of the carriage to the left; a metal strip with braille numbers on the carriage indicating the carriage position in braille cells 1 through 40; line spacing accomplished by turning the paper feed knobs manually; paper fed from the back of the machine into a clamp arrangement.

Name: Seifried Midget Braille and New York Point Writer
Source: Introduced in Chicago, Illinois
Availability: circ. 1890 (discontinued)
This writer had a keyboard with three braille keys and a cell spacer. It was capable

of writing American and New York Point braille. Eight-inch paper was inserted from the rear of the machine between two rubber rollers.

Name: Stainsby Berridge Braillewriter
Source: Stainsby/Wayne, England
Availability: circ. 1910 (discontinued)
Regular 11-inch paper was secured under a paper clamp and slipped under guide rails of the cell spacing mechanism which was completely self-contained. Braille was formed downward as with a slate. The writer was also capable of interpointing.

Name: Stainsby Braille Writer for the Deaf-Blind
Source: RNIB
Availability: Supplier above Customers' own machines can be modified for £0. 10. 6
The large size Stainsby machines, Interlining, Interpointing and Combined models can be supplied fitted with a special end stop instead of a bell to give deaf-blind users warning before the end of the line is reached. This is done at no additional cost.

Name: Stainsby Braille Writer—French Model
Source: RNIB
Availability: Supplier, above Cat. No. 9011: £18. 0. 0
The design of this machine is similar to the standard model but the carriage-way is adapted to write braille on one side of the paper only to confirm with the general style of manuscript books produced in France. The machine will take a sheet of paper sufficiently large to write two pages of braille. Available with reversed keys only.

Name: Stainsby Braille Writer—Large Size
Source: RNIB
Availability: Supplier, above
This writer uses 10" x 13½" paper and is supplied complete in a carrying case of sufficient size to hold a supply of manila paper in addition to the machine. Three standard models are produced: interlining, interpointing and combined, each of which is available with either ordinary or reversed keys.

Cat. No. 9005A: Interlining model, ordinary keys	£15. 10. 0
Cat. No. 9005B: Interlining model, reversed keys	£15. 10. 0
Cat. No. 9005C: Replacement board and clamp only	£ 1. 16. 0
Cat. No. 9008A: Interpointing model, ordinary keys	£15. 16. 0
Cat. No. 9008B: Interpointing model, reversed keys	£15. 16. 0
Cat. No. 9008C: Replacement board, clamp and wood strip only	£ 2. 2. 0
Cat. No. 9010A: Combined model, ordinary keys	£17. 12. 0
Cat. No. 9010B: Combined model, reversed keys	£17. 12. 0

Name: Stainsby Braille Writer—Small Size
Source: RNIB
Availability: Supplier, above
Specially designed for writing on small manila paper 7½" x 10¼" and for interpoint braille only. The board folds in three.

Cat. No. 9452A: Interpointing model, ordinary keys	£16. 17. 6
Cat. No. 9452B: Interpointing model, reversed keys	£16. 17. 6

Name: Key Caps
Source: RNIB
Availability: Supplier, above Cat. No. 9364: per set of 6 £0. 2. 0
Plastic caps for fitting to metal keys of all Stainsby machines. Adhesive is necessary for affixing.

Name: Star Braille Writer
Source: Lighthouse, Welfare Center for the Blind
Availability: Michishirube Publishing House (Evangelical Mission for the Blind)
The machine can write on both sides of paper as well as on one side only.

	24,900 yen
Leather case	2600 yen

Name: Unigraph
Source: Data not available
Availability: circ. 1890 (discontinued)
This model was designed to write either American braille or New York Point braille. Brailling was accomplished by a hand-held stylus. A control knob when rotated one quarter turn changed the spacing from the full cell of American braille to the half cell of New York Point. Line spacing was controlled by the paper feed. Nine-inch paper was used. The Unigraph operated from left to right.

Name: Visible Writer
Source: Alfred Wayne, Birmingham, England
Availability: circ. 1912 (discontinued)
This writer had many characteristics similar to the Boston Braillewriter.

Name: Wight Writer
Source: Howe Press of Perkins School for the Blind
Availability: circ. 1850 (discontinued)
The writer, the oldest in the Perkins Museum, utilized paper measuring 6″ x 8″ which was contained in the carrier frame. Line spacing was achieved by squeezing two levers in the upper left-hand side of the frame. Nine pearl button keys produced nine pin prick dots in one cell. The braille cell contained dots in a 3 x 3 configuration. The writer operated from left to right.

Frames, Slates, and Braillewriting Guides

It is the understanding of AFB that braille writing slates are manufactured in Switzerland and France. No other data was available on these at the time this catalog was compiled.

Name: Braille Slates and Styluses
Source: APH
Availability: Supplier, above

Large desk slate, 4 line, 37 cell	$4.10
Small desk slate, 4 line, 27 cell	$3.25
Correcting slate, 4 line, 37 cell	$2.10
Pocket slate, 4 line, 28 cell	$2.00
Postcard slate, 4 line, 19 cell	$1.65
Styluses, each	$ .12

Name: Braille Writing Frame
Source: Lighthouse, Welfare Center for the Blind
Availability: Nakamura Braille Manufacturing Co.

Nakamura-32: 32 cells, 18 lines, brass	750 yen
Nakamura-32-S: 37 cells, 20 lines, brass	1500 yen
Nakamura-37: 37 cells, 20 lines, brass	950 yen
Nakamura-2L-32: (Two-line Pocket Frame), 32 cells, 2 lines, aluminum	350 yen

Nakamura-6L-30: (Six-line Pocket Frame), 30 cells, 6 lines, aluminum 500 yen
Nakamura-6L-19: (Pocket Frame), 19 cells, 6 lines, aluminum 400 yen
Nakamura-4L-32: 32 cells, 4 lines, Price unknown
Nakamura-4L-26: 26 cells, 4 lines, aluminum Price unknown

Name: Braille Writing Frame (A)
Source: Lighthouse, Welfare Center for the Blind
Availability: Michishirube Publishing House (Evangelical Mission for the Blind) 350 yen

Aluminum; 2 lines; 32 Standard cells; 28 Beginners' cells.

Name: Braille Writing Frame (B)
Source: Lighthouse, Welfare Center for the Blind
Availability: Michishirube Publishing House (Evangelical Mission for the Blind) 1350 yen

32 cells, 10 lines.

Name: Braille Writing Frame (C)
Source: Lighthouse, Welfare Center for the Blind
Availability: Michishirube Publishing House (Evangelical Mission for the Blind) 750 yen

Veneer and brass plated with nickel; 32 Standard cells; 28 Beginners' cells.

Name: Braille Writing Frame (E)
Source: Lighthouse, Welfare Center for the Blind
Availability: Michishirube Publishing House (Evangelical Mission for the Blind) 450 yen

Aluminum; 32 cells; 6 lines; writes on one side of paper.

Name: Braille Writing Slates
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Aluminum slate, 21 lines, 22 cells 19,25 DM
Aluminum slate, 10 lines, 36 cells 16,00 DM
Aluminum slate, 8 lines, 20 cells 8,50 DM

Name: Brown Slate
Source: APH
Availability: Supplier, above $2.80

The Brown slate is a refinement of the regulation pocket slate to which has been added an extra frame to hold the pins for mounting the paper so that it is possible to drop open the bottom part and read what has been written without taking the paper out of the slate itself. Especially useful for working mathematics on braille paper.

Name: Desk Slates
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above
Price includes stylus and 28-line board.

Cat. No. 13: 36 cells, 4 line. Nickel-plated brass $3.75
Cat. No. 13T: 40 cells, 4 line. Nickel-plated brass, same spacing of cells as Perkins Brailler, for transcribing and correction. $3.50
Cat. No. 137: 37 cell, 4 line. $3.75
Jumbo Slate—18 cell, 4 line. Oversize cell and dot, for training under special conditions. Price includes stylus; used without board. $3.50

Name: Giant Dot Braille Slate (Desk Model)
Source: AFB
Availability: Supplier, above Cat. No. BS3: $5.95
Board slate with a 7" x 11⅜" aluminum board backed with sponge rubber, and hinged brass writing frame of 15 cells and two lines. Can be moved to 7 positions on the page to provide 14 lines of braille. Paper holder when turned over shifts paper for interline writing. Cells about ⅓ larger than standard braille. Supplied with oversize stylus.

Name: Giant Dot Braille Slate (Pocket Model)
Source: AFB
Availability: Supplier, above Cat. No. BS4: $2.50
Sturdy steel, two lines of 16 cells each. Overall size 8⅝" x 1-9/16". Supplied with oversize stylus.

Name: Interlining Braille Frame
Source: RNIB
Availability: Supplier, above
For writing standard character interline braille, the device comprises a composition wooden board, metal guide, reversible paper clamp and an ordinary stylus. When one side of the paper has been brailled, the paper is turned over as a unit. The binding margin is made automatically. A hinged guide is supplied unless otherwise requested. All components can be supplied separately.

Large size for paper 10" x 13½"	
Cat. No. 9016: Large frame, complete	£1. 18. 6
Cat. No. 9016A: Guide only, swivel	£0. 17. 3
Cat. No. 9016B: Guide only, hinged	£0. 17. 3
Cat. No. 9016C: Board only	£0. 10. 3
Cat. No. 9016D: Paper clamp only	£0. 11. 0
36 cells, 18 lines	
Small size for paper 7½" x 10¼"	
Cat. No. 9017: Small frame, complete	£1. 12. 9
Cat. No. 9017A: Guide only, swivel	£0. 13. 3
Cat. No. 9017B: Guide only, hinged	£0. 13. 3
Cat. No. 9017C: Board only	£0. 8. 9
Cat. No. 9017D: Paper clamp only	£0. 10. 9
25 cells, 14 lines	

Name: Merrick Interlining Frame
Source: RNIB
Availability: Supplier, above
A wooden frame with metal guide designed for writing small character interline braille.

Cat. No. 9025: For paper 10" x 13½"	£1. 9. 3
Cat. No. 9026: For paper 7½" x 10¼"	£1. 4. 9

Name: Millard Metal Frame
Source: RNIB
Availability: Supplier, above
A metal frame to assist blind and partially sighted people to write longhand. The paper is placed under the top portion and held in place by a clip. Elastic bands serve as guides to the pen or pencil and allow sufficient movement for upward and downward strokes.

Cat. No. 9038: 15 lines to the page	£0. 6. 0
Cat. No. 9039: 12 lines to the page	£0. 5. 0

Name: Nine-line Interlining Frame
Source: RNIB
Availability: Supplier, above Cat. No. 9188: £2. 3. 6
A metal frame for writing a full sheet of interline standard size braille without removing the paper. For use with paper 7½″ x 10¼″.

Name: Pocket Slates
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above
Price includes one stylus.

Cat. No. 1: 27 cell, 4 line. Lightweight aluminum	$2.00
Cat. No. 2: 19 cell, 6 line. Postcard size, lightweight aluminum	$2.00
Cat. No. 11: 27 cell, 4 line. Nickel plated brass, same size as No. 1; heavier but stronger; advised for school use.	$2.00
Cat. No. 13X: 36 cell, 4 line. Nickel plated brass, not as handy for carrying but provides longer lines. Same size and weight as No. 13 but used without board.	$2.50

Name: Pocket Braille Frame (Two-Line)
Source: RNIB
Availability: Supplier, above Cat. No. 9042: £0. 13. 9
A metal frame for writing standard size braille on one side only of small size paper.

Name: Pocket Braille Frame (Four-Line)
Source: RNIB
Availability: Supplier, above Cat. No. 9044: £0. 14. 9
A metal frame for making occasional notes in small character braille on one side of small size paper only.

Name: Pocket Braille Frame (Two-Line Giant Dot)
Source: RNIB
Availability: Supplier, above Cat. No. 9043: £0. 13. 0
A metal frame for writing giant dot braille on one side of small paper 7½″ x 10¼″; supplied with giant dot stylus.

Name: Pocket Braille Frame (Two-Line Interlining)
Source: RNIB
Availability: Supplier, above Cat. No. 9045: £0. 13. 0
A metal frame designed for writing small character interline braille on small size paper.

Name: Pocket Braille Frame (Five-Line Interlining)
Source: RNIB
Availability: Supplier, above Cat. No. 9046: £0. 17. 6
A metal frame for writing standard size interline braille.

Name: Pocket Braille Frame (Eight-Line Interpointing)
Source: RNIB
Availability: Supplier, above Cat. No. 9499: £0. 17. 6
A metal frame for writing interpoint standard size braille.

Name: Portland Frame
Source: RNIB
Availability: Supplier, above Cat. No. 9166: £0. 8. 9
Of similar design to the Millard frame but of wood construction. Made for use with 10″ x 8″ paper only.

Name: Tylor Micro-Braille Slate (Postcard Size)
Source: AFB
Availability: Supplier, above Cat. No. BS5: $2.75
Used for writing "small character" braille on one side of paper only. Pins so arranged that paper remains attached when lifted and braille may be read without removing paper from slate. Over-all size 6⅛" x 4¼". Eleven lines of 26 cells each. Complete with stylus. (Imported from Great Britain.)

Name: Tylor Postcard Frame
Source: RNIB
Availability: Supplier, above
A metal frame for writing small character braille on one side of the paper, the pins being so arranged that the braille may be read without removing the paper from the frame. The frame is produced with a hinge at the side or at the top.

Cat. No. 9196: Side hinge	£0. 15. 0
Cat. No. 9187: Top hinge	£0. 15. 0

Name: Tylor-Tatlow Frame
Source: RNIB
Availability: Supplier, above Cat. No. 9358: £1. 0. 0
For writing small character interline braille. When one side has been completed the frame is turned over and writing continues. Alternate lines on each side of the frame are numbered in braille for quick reference.

Name: Upward Writing Slate
Source: Ruth Marcus, Bell School, Chicago, Illinois
Availability: Experimental prototype
This slate has six pins for each cell in a top plate. The pins are machined to very close tolerances and can be pushed through the top plate with an ordinary stylus. The underside of the pin is concave and when the top plate is lowered over the braille paper, the underside of the pin presses down on the pin protruding up into the paper. The design minimizes the problem of alignment of the stylus and the embossing pin.

Name: Venetian Writing Frame
Source: RNIB
Availability: Supplier, above Cat. No. 9194: £0. 6. 6
A device made of cloth covered strawboard for assisting blind or partially sighted people to write longhand. Each line of writing is guided by turning down a section of the sheath which rests on the notepaper. For paper 10" x 8" only.

Name: Writing Slate
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above 5,00 DM
Ink writing, for freehand writing

Name: Writing Slates
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above
For scribing

9 rows, 36 cells	14,50 DM
9 rows, 28 cells	10,30 DM
9 rows, 25 cells	9,60 DM
9 rows, 22 cells	8,00 DM
4 rows, 26 cells	6,40 DM
3 rows, 12 cells	4,40 DM
21 rows, 28 cells	18,00 DM

Name: Giant Dot Guide
Source: RNIB
Availability: Supplier, above Cat. No. 9023: £0. 12. 6
An interlining guide for writing giant braille dots. For use with small size board only.

Name: Tylor Margin Guide
Source: RNIB
Availability: Supplier, above Cat. No. 9363: £0. 1. 3
A small metal guide for making braille marginal notes.

Notebooks, Binders, and Stationery

Name: Bookbinders
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
These are designed to hold sheets of brailled paper of standard size. On the left side of each page 4½ cm are needed for binder grip. The binders are available in library and normal coverings for under 50 sheets, 50 to 100 sheets, and over 100 sheets. Prices range from 5,40 DM to 8,75 DM.

Name: Braille Book Reading Cover
Source: RNIB
Availability: Supplier, above Cat. No. 9369: £0. 5. 6
Made of cloth covered board and designed to provide temporary support and protection for paper covered volumes. For large size embossed volumes only.

Name: Braille Notebooks with Punched Braille Paper
Source: APH
Availability: Supplier, above
The notebook covers are made of extra heavy board covered with imitation leather cloth designed for heavy wear. The paper fillers are made of regular slate or writer paper with three holes in the left-hand margin to match the rings in the notebook covers.

Notebook	$2.00
Paper Fillers	$1.00 per 3 pounds

Name: Cordex Binder
Source: RNIB
Availability: Supplier, above
For binding supplements, music, and other folded braille pamphlets. The sheets are threaded through spring controlled cords on the inside of the spine of the cover. Each pamphlet is held separately and can be removed easily.

Cat. No. 9340: for sheets 10″ x 13½″	£0. 9. 6
Cat. No. 9341: for sheets 10″ x 13½″	£0. 9. 6
Cat. No. 9342: for sheets 7½″ x 10¼″	£0. 8. 0
Cat. No. 9343: for sheets 7½″ x 10¼″	£0. 8. 0

Name: Ring Type Binder
Source: RNIB
Availability: Supplier, above
Made of strong strawboard covered with cloth and fitted with a split ring device.

Cat. No. 9491: for sheets 10″ x 13½″	£0. 12. 0
Cat. No. 9351: for sheets 7½″ x 10¼″	£0. 11. 0

Name: Spring Clip Binder
Source: RNIB
Availability: Supplier, above
Made of strong strawboard covered with cloth, fitted with a spring clip internally along the length of the cover. Produced in two sizes to fit the standard size large and small manila papers supplied by the Institute.

Cat. No. 9100: large size	£0. 5. 3
Cat. No. 9102: small size	£0. 4. 0

Name: Super Cobra Binder
Source: RNIB
Availability: Supplier, above
Of similar design to the Twin Cobra but of stronger construction. The spring wires can be fastened so that intermediate pages can be removed.

Cat. No. 9489: for sheets 10″ x 13½″	£0. 5. 6
Cat. No. 9490: for sheets 7½″ x 10¼″	£0. 3. 6

Name: Twin Cobra Binder
Source: RNIB
Availability: Supplier, above
Thick manila covers for binding sheets of paper punched with two holes. The sheets are threaded onto spiral spring wires which are held in position by a metal clip.

Cat. No. 9349: for sheets 10″ x 13½″	£0. 3. 6
Cat. No. 9350: for sheets 7½″ x 10¼″	£0. 2. 9

Name: Loose Leaf Notebooks
Source: RNIB
Availability: Supplier, above
These notebooks have morocco leather covers and are fitted with spring split rings to hold the paper, which is perforated with three holes along the shorter side. Each notebook is supplied with 25 pieces of manila paper and additional refills are available.

Cat. No. 9103: Pocket size	£0. 14. 3
Cat. No. 9104: For use with Tylor postcard frame	£1. 1. 0
Cat. No. 9105: For use with Tylor-Tatlow pocket frame	£1. 0. 0

Name: Notebooks and Notepads
Source: RNIB
Availability: Supplier, above
The notebooks afford a simple and easy method of keeping braille notes for future use. They contain 18 leaves and when being brailled the paper is inserted in the frame with the fold of the book on the right. The notepads comprise 12 leaves cut to size, each leaf perforated and easily detachable. For use with Tylor postcard frames only.

Cat. No. 9133A: Notebook, thick quality, per 3 books	£0. 1. 3
Cat. No. 9133B: Notebook, medium quality, per 3 books	£0. 1. 3
Cat. No. 9133C: Notebook, thin quality, per 3 books	£0. 1. 3
Cat. No. 9134A: Notepad, thick quality, per 3 pads	£0. 1. 0
Cat. No. 9134B: Notepad, medium quality, per 3 pads	£0. 1. 0
Cat. No. 9134C: Notepad, thin quality, per 3 pads	£0. 1. 0

Name: Braille Slate and Writer Paper
Source: APH
Availability: Supplier, above — per 4 lbs $1.00
Standard weight, brown magazine braille paper for use with slates and/or braillewriters.

Name: Braille Transcribing Paper
Source: APH
Availability: Supplier, above — per 500 sheets $3.00
Braille paper (100 lb manila) for use with transcribing slates and/or braillewriters, for transcribing purposes.

Name: Braille Writing Paper
Source: Lighthouse, Welfare Center for the Blind
Availability: Shinko Paper Manufacturing Co., Ltd.

1 lb	54 yen
80 lb	4320 yen
100 lb	5400 yen
120 lb	6480 yen

Name: Embossed Pencil-Writing Paper
Source: APH
Availability: Supplier, above — per 165 sheet pad $1.00
Regulation white braille paper, embossed with heavy guide lines ½″ apart for use for pencil writing.

Name: Large-Type Writing Paper
Source: APH
Availability: Supplier, above — per lb $.35
Buff-colored paper, similar to the paper used in printing large type books and printed with heavy green lines ¾″ apart, for pencil writing by the partially sighted.

Name: Raised Line Notepaper
Source: RNIB
Availability: Supplier, above — Cat. No. 9041: per 24 sheets £0. 2. 0
Paper 10″ x 8″ with embossed guide lines for use with pencil or ballpoint pen.

Name: RNIB Correspondence Tablets
Source: RNIB
Availability: Supplier, above — Cat. No. 9171: £0. 2. 0
When placed under a sheet of ordinary notepaper, the larger embossed plastic tablet serves as a guide for writing longhand. The smaller tablet is inserted when addressing the envelope.

Name: Writing Paper
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Linen paper tablet with embossed lines—2 sizes	0,35 DM
	0,20 DM
White relief paper with embossed lines	0,05 DM

Name: Writing Paper
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

Letter pad, 17 x 27 cm, 50 pages	0,80 DM
Loose sheets, 27 x 34 cm, 27 x 22 cm, 27 x 27 cm	
one side: smooth, grey	1,10 DM
two sides: smooth, light grey	1,30 DM
smooth, yellow	2,00 DM
smooth, light yellow	2,50 DM

Name: Writing Paper (for regular pen)
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

White, folded, with white embossed lines	0,05 DM
White, folded, with black embossed lines	0,09 DM

Name: Postcards
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Self-adhesive postcards, with carbon	0,03 DM
Board to support carbon	3,35 DM

Name: Letter Envelope
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 0,04 DM
With impression "braillewriting," 18 x 15 cm.

Name: Envelopes
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above 0,10 DM
With imprint "Writing from the Blind"

Name: Paper Punch
Source: AFB
Availability: Supplier, above Cat. No. WC193: $3.20
The Presto-All-Purpose Punch is a device for perforating braille paper for mounting in notebooks. Three movable punches are mounted in slots. The center punch may be removed for two-ring binder notebooks. A hinged cover is pressed down to operate all the punches simultaneously. A guide is provided at the left of the device for accurate placement of the paper. Moulded rubber cushion snaps on bottom to collect punched paper circles.

Script Writing Aids

Name: Check Stencil
Source: AFB
Availability: Supplier, above Cat. No. MS231: $1.25
A template for filling in necessary information on checks. Blank check must be submitted since these are made individually to order.

Name: Pension Book Signature Guide
Source: RNIB
Availability: Supplier, above Cat. No. 9451: £0. 0. 6
A guide of presspahn board with apertures cut to correspond with signature spaces on the official pension withdrawal form.

Name: Raised-Line Check Book
Source: APH
Availability: Supplier, above $.40
This raised-line checkbook is printed with raised inkprint lines on regulation checkbook paper, bound with a wire binding for easy detachment of checks and interleaved with plain white braille paper for stub record-keeping.

Name: Script Writing Aid
Source: RNIB
Availability: Supplier, above
Rubber sheeting to be used as a base when writing longhand. Placed under a sheet of writing paper, it is possible to feel the slight impression made by the pencil or ballpoint pen, thus enabling the blind person to detect the position of the last word. Can be used in conjunction with the Portland or Millard writing frames.

Cat. No. 9164: 9″ x 7″	£0. 1. 3
Cat. No. 9165: 7½″ x 5″	£0. 0. 9

Name: Script Writing Boards
Source: AFB
Braille Institute of America
Howe Press of Perkins School for the Blind
Availability: Suppliers, above
Information and prices may be obtained by writing directly to the suppliers listed.

Name: Script Writing Frames
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Frame with fold-over top plate having spaced windows for writing script	4,00 DM
Frame, same as above, except with vertical guides	4,70 DM

Name: Signature Guide
Source: AFB
Availability: Supplier, above — Cat. No. WS202: $.35
Two rubber blocks support two 4¼″ lengths of metal rod, 9/16″ apart. Rubber reduces danger of slipping.

Name: Signature Guide
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above — 6,60 DM

Name: Signature Guide
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above — $.30
Alumnium, 3½ x 1, suitable for round or square hand.

Name: Signature Guide
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above — 1,50 DM

Styli and Erasers—(Alphabetical by Supplier)

Name: Tuckaway Stylus
Source: AFB
Availability: Supplier, above
Of standard shape but point can be unscrewed and inserted in aluminum handle.

Cat. No. BS1: Stylus	$.95
Cat. No. BS2: Replacement Points	$.50

Name: Stylus
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Saddle	0,70 DM
Knob	0,70 DM

Name: Braille Stylus
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability. Experimental prototype
Plastic steel has been utilized to form braille stylus handles which are contoured to fit the palm of the user's hand. Development is proceeding on a technique for formulating the plastic steel and writing of instructions that will permit blind users to make their own handles to fit individual hands. Various styli, including those with bent shanks, are fitted to the handles to maximize ease of use.

Name: Stylus
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above — per dozen, $1.80

Name: Tuck-Away Stylus
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above — $.50
Aluminum point may be unscrewed and inserted in handle for safe carrying.

Name: Styles
Source: Lighthouse, Welfare Center for the Blind
Availability: Michishirube Publishing House (Evangelical Mission for the Blind) — 35 yen
Various kinds are available.

Name: Styles
Source: Lighthouse, Welfare Center for the Blind
Availability: Nakamura Braille Manufacturing Co.

General (for 32-37 cell frame)	40 yen
Children (for 32 cell frame)	40 yen
Pocket (for 32 cell frame)	40 yen
General Superior (for 32-37 cell frame)	250 yen
Lepers (for 32 cell frame)	120 yen

Name: Styles
Source: RNIB
Availability: Supplier, above
The styles are produced with various shaped handles to suit individual needs. The handles are made of hardwood and the points of specially tempered steel. All styles described are for producing standard character braille.

Cat. No. 9057: Ordinary—This style is standard issue for all frames except those for giant dot braille. £0. 0. 6

Cat. No. 9056: Mushroom—The large handle provides for easier and firmer manipulation. £0. 0. 9

Cat. No. 9058: Peg Top—Recommended for use when brailling for long periods. £0. 1. 3

Cat. No. 9060: Saddle-back—The design of the handle affords support to the forefinger and assists in applying direct pressure when brailling. £0. 0. 6

Cat. No. 9384: Safety—Designed for carrying in handbag or pocket. £0. 7. 6

Cat. No. 9295: Giant dot—The same as the ordinary style except that the steel point is of thicker gauge for writing giant dot braille. £0. 1. 0

Name: Stylus
Source: Verein zur Förderung der Blindenbildung e.V.
Availablility: Supplier, above 1,50 DM
Metal tip with wood handle in saddle or pear-shaped form

Name: Braille Eraser
Source: APH
Availability: Supplier, above $.10

Name: Braille Eraser
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 0,55 DM

Name: Eraser (wood)
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above per dozen, $1.80

Name: Erasers
Source: RNIB
Availability: Supplier, above
Made in bone or steel. For removing incorrect dots. The smaller end is for erasing single dots and the larger for two or more characters.

Cat. No. 9487: Bone £0. 1. 0
Cat. No. 9012: Steel £0. 0. 9

RECREATIONAL

CARDS AND CARD GAMES

Name: Bali Playing Cards
Source: RNIB
Availability: Supplier, above Cat. No. 9331: £0. 8. 6
A word-building game consisting of two packs each of 54 cards which can be played either as solitaire or by up to four players. Embossed on the face with standard size braille characters.

Name: Brailled "Bicycle" Cards
Source: AFB
Availability: Supplier, above Cat. No. GM46: $.60
Standard deck with braille dots.

Name: Happy Families Playing Cards
Source: RNIB
Availability: Supplier, above Cat. No. 9086: £0. 4. 0
A card game for two or more players, consisting of a pack of 48 cards comprising

12 families, the object being for each player to collect as many families as possible. The cards are embossed with standard size braille characters.

Name: Jumbo Cards
Source: AFB
Availability: Supplier, above Cat. No. GM49: $.80
Oversized symbols and numbers for persons with impaired vision. Standard deck.

Name: Kem Plastic Brailled Cards
Source: AFB
Availability: Supplier, above Cat. No. GM47: $3.55
Solid plastic, durable dots, washable.

Name: Kem Plastic Brailled Pinochle Cards
Source: AFB
Availability: Supplier, above Cat. No. GM48: $3.55
For replacement of plastic playing cards, write to: Kem Plastic Playing Cards, Inc., Service Department, Poughkeepsie, New York.

Name: Lexicon Card Game
Source: RNIB
Availability: Supplier, above Cat. No. 9337: £0. 5. 3
A word-building game for several players consisting of 52 cards on which are printed both letters and numbers, and the braille equivalents on the face in giant dot characters. Lexicon with Moon embossed markings is obtainable from The Moon Society, Holmesdale Road, Reigate, Surrey, England.

Name: Patience Cards
Source: RNIB
Availability: Supplier, above Cat. No. 9087: £0. 3. 9
Ordinary small size playing cards with the braille equivalents embossed in standard size braille on the face of the cards. The cards are available in green or orange reverse, the latter being distinguished by braille symbols in the center.

Name: Pinochle Cards—Brailled
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $1.75

Name: Pit Card Game
Source: RNIB
Availability: Supplier, above Cat. No. 9332: £0. 6. 0
This game is based on the operations of the American Corn Exchange and will be of particular interest to young blind people and social clubs. Each pack contains 65 cards embossed on the face with standard size braille characters.

Name: Playing Cards—Brailled
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $1.50

Name: Playing Cards
Source: RNIB
Availability: Supplier, above
Linen faced cards as used by sighted players. The reverse of the cards are printed in either red or blue with a special design to camouflage the braille markings. Supplied in metal box. Produced with either Standard or Old Style markings. Playing

cards with Moon embossed markings are obtainable from The Moon Society, Holmesdale Road, Reigate, Surrey, England.

Cat. No. 9088: Standard marking	£0. 3. 6
Cat. No. 9089: Old Style markings	£0. 4. 3

Name: Playing Cards
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

Skat cards with tactile numbers	4,50 DM
Skat cards, undermarked for use with sighted players	5,00 DM
Rummy cards with tactile numbers	9,00 DM
Quartet set of cards	3,00 DM

Name: Simplicity Patience
Source: RNIB
Availability: Supplier, above — Cat. No. 9429: £0. 5. 0
The positions of the embossed clockfaces and hands denote the suits and values of the cards. The cards are made of thick manila paper and are primarily intended for the use of blind persons with no knowledge of braille. Sold in double packs. Also known as "Clockface" Patience.

Name: Whot Card Game
Source: RNIB
Availability: Supplier, above — Cat. No. 9362: £0. 4. 9
A card game for several players. The pack consists of 54 cards, suit signs being denoted by geometrical designs and values by braille numerals embossed on the face in standard size braille. The object of the game is for each player to dispose of his cards as soon as possible.

Name: Bridge Scorer
Source: RNIB
Availability: Supplier, above — Cat. No. 9206: £0. 3. 9
This scorer has been specially designed for the use of blind bridge players. It consists of a plate pierced with a pair of three octagonal holes "above and below the line." Can be carried in the pocket and a leather-cloth cover is provided to prevent the arithmetic type from falling out. It is essential that the user have a knowledge of the Arithmetic Notation. (A booklet describing the notation can be obtained from the Institute-braille edition No. 12853; letterpress edition No. 726.)

Name: Rules for Canasta
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above — $.10
(Will be withdrawn when present stock is exhausted.)

Name: Slate for brailled playing cards, with stylus
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above — $1.50
(Will be withdrawn when present stock is exhausted.)

GAMES

Name: Anagram Tiles
Source: AFB
Availability: Supplier, above — Cat. No. GM38: $1.80
Separate set of tiles (98 brailled, 2 blank) which can be combined with those furnished with Scrabble Game to have enough for Anagrams. Plastic list of letter dis-

tribution furnished with Scrabble game makes it easy to separate titles when Scrabble is played.

Name: Bingo
Source: AFB
Availability: Supplier, above
Wooden board ⅜″ thick by 8″ square. Braille and large white-on-black numbers. Wooden markers furnished with each board.
Cat. No. GS39: Bingo Set $2.05
Wooden board which provides 5 columns numbered consecutively from 1 to 75 in braille and inkprint.
Cat. No. GS40: Master Board $3.45
Green-stained wooden markers with braille and inkprint numbers from 1 to 75 to fit Master Board.
Cat. No. GS41: Call Numbers $3.40

Name: Centerpeg
Source: RNIB
Availability: Supplier above Cat. No. 9195: £0. 5. 3
A game for two players. In each grooved circle are eight holes for pegs of which there are 12 for each player. The object of the game is for one player to remove all his opponent's pegs.

Name: Checker Board with Men
Source: AFB
Availability: Supplier, above Cat. No. GS51: $1.10
Board 12″ square with sunken 1″ squares 3/16″ deep. Round and square men to distinguish colors. Men are ⅜″ thick and hollow on one side for use as Kings.

Name: Chess Set
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $5.20

Name: Chinese Checkers
Source: AFB
Availability: Supplier, above Cat. No. GM52: $3.65
Wood-framed board, 16½″ square with differently shaped wooden men.

Name: Clocko
Source: RNIB
Availability: Supplier, above Cat. No. 9282: £0. 6. 0
A game for two players. May be found helpful in teaching children to tell the time and also to add and subtract numbers. The game is played by moving the clock hands backwards or forwards on the brailled clock face according to the rates of scoring. The score is obtained by spinning the small dials.

Name. Compact Chess and Draughts Outfits
Source: RNIB
Availability: Supplier, above Cat. No. 9167: £0. 14. 0
A set of miniature pegged pieces representing chessmen with four additional pawns and two additional rooks. For the game of draughts the pawns are used as men and the rooks as kings.

Name: Cribbage Board
Source: AFB
Availability: Supplier, above Cat. No. GS54: $3.15
Wooden board measuring 3″ x 14¾″. Holes marked with grommets for easy location. Brass markers in enclosure in rear.

Name: Dice and Dice Cup
Source: RNIB
Availability: Supplier, above Cat. No. 9367: £0. 2. 6
Dice molded from plastic with raised dots for values and a plastic container for shaking the dice.

Name: Dominoes
Source: AFB
Availability: Supplier, above Cat. No. GS55: $3.05
Molded black plastic with very prominent raised dots.

Name: Dominoes
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $3.00

Name: Dominoes
Source: RNIB
Availability: Supplier, above
Made of plastic and having raised dots on a white background with black inset piece on reverse. The double blank to double six set is adequate for most games of dominoes but for larger numbers of players the seven blank to double nine set should be added. The dominoes are also ideal for partially sighted players.

Cat. No. 9302: Double blank to double six	£0. 11. 3
Cat. No. 9303: Seven blank to double nine	£0. 11. 3

Name: Draughtsboard and Draughtsmen
Source: RNIB
Availability: Supplier, above
A wooden board with sunken playing squares. The colors of the men are distinguished by size. The set includes additional pieces of double thickness for use as kings.

Cat. No. 9092: Draughtsboard	£0. 9. 9
Cat. No. 9095: Draughtsmen per set	£0. 3. 6

Name: French Chess Set
Source: AFB
Availability: Supplier, above Cat. No. GS53: $3.90
Wooden chess board and men. Board with raised and lowered squares. Measures 11¾″ square by 1″ thick. Men equipped with metal pegs which fit in holes on board. Colors distinguished by having "flats" sanded on the white. Men are housed in a wooden box with slide cover.

Name: Games
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

Chess-merils-draughts, playing board 28 x 28 cm	39,50 DM
Chess-merils-draughts, playing board 28 x 28 cm	36,00 DM
Draughts-merils, playing board, 28 x 28 cm	21,00 DM

Merils playing board, 21 x 21 cm	10,00 DM
You Are Not An Angry Man, playing board 27 x 27 cm	14,00 DM
Wood pieces for game "Quiet Blood"	5,00 DM
Dominoes with tactile dots	1,50 DM

Name: Imma Whiz
Source: AFB
Availability: Supplier, above — Cat. No. GM43: $1.80
Mathematical bingo game; 24 cards with 6 problems in addition and 6 in subtraction and deck of numbered cards in braille and inkprint. Also multiplication and division cards.

Name: Merrick Chessboard and Chessmen
Source: RNIB
Availability: Supplier, above
A wooden board with the black squares raised and all squares drilled for pegged chessmen. The pieces are of uniform height, the white having a point at the top to distinguish them from the black. The men can be used on either the small or large board.

Cat. No. 9278: Large board	£1. 2. 0
Cat. No. 9277: Small board	£0. 19. 6
Cat. No. 9279: Chessmen per set	£0. 8. 6

Name: Nine Men's Morris
Source: RNIB
Availability: Supplier, above — Cat. No. 9212: £0. 3. 6
A game for two players. Consists of a board with grooved lines. Each line contains three holes and each player has a set of nine pegs. The object of the game is to get three pegs in a row along one line.

Name: Noughts and Crosses
Source: RNIB
Availability: Supplier, above — Cat. No. 9178: £0. 1. 6
A game for two players consisting of a wooden board drilled with three rows of three holes and nine pegs. The pointed end of each peg represents a cross and the flat end a nought.

Name: Parcheesi
Source: AFB
Availability: Supplier, above — Cat. No. GS56: $3.40
Inkprint squares or spaces have been replaced by holes into which men of 4 different shapes for color identification fit. Safety spaces are indicated by extra holes outside pattern. Heavy cardboard with wooden frame measuring 17¾" square. Oversized dice supplied with game.

Name: Patience Board
Source: RNIB
Availability: Supplier, above — Cat. No. 9422: £1. 5. 6
Two differently designed sides of the board enable a wide variety of games of patience to be played. Complete with games book in braille and letterpress.

Name: Pocket Chess Set
Source: RNIB
Availability: Supplier, above Cat. No. 9498: £0. 8. 6
A compact chess set particularly useful for solving chess problems. The board has octagonal cells and pieces of arithmetic type are used for the men. Full instructions for use are supplied. A knowledge of Arithmetic Notation is not required when playing chess with this set.

Name: Reversi
Source: RNIB
Availability: Supplier, above Cat. No. 9434: £0. 7. 6
A game for two players. The board has 64 sunken circles arranged in a square. Each player has 32 counters, smooth on one side and rough on the other. The object of the game is to secure complete lines of counters, the rules permitting each player to reverse his opponent's pieces.

Name: Rook—Brailled Version
Source: AFB
Availability: Supplier, above Cat. No. GM50: $1.70

Name: RNIB Draughts Set
Source: RNIB
Availability: Supplier, above Cat. No. 9210: £0. 4. 6
An inexpensive set made with strawboard base with sunken playing circles. The men are of plain wood, the kings being of double thickness. The white pieces have a stud to distinguish them from the black.

Name: Scrabble
Source: AFB
Availability: Supplier, above Cat. No. GM61: $6.40
Plastic waffle-like mat with braille symbols has been placed on top of inkprint board. Tiles, with inkprint and braille letters, fit securely into mat. Board equipped with built-in turning device making it revolve easily when placed on flat surface. Tiles and tile racks packaged in separate container which can be used to shuffle tiles. Includes instructions in braille and inkprint. Board measures about 15½" square. Weight about 4½ lbs.

Name: Solitaire
Source: RNIB
Availability: Supplier, above Cat. No. 9197: £0. 5. 3
The game comprises a square wooden board with 33 holes and 33 pegs. One peg differs from the rest by having part of the surface bevelled. The object is to remove all the pegs but one from the board, the one left to be in the space first made vacant.

Name: Unilock Word Building Device
Source: RNIB
Availability: Supplier, above
Cat. No. 9096: game £0. 13. 0
Cat. No. 9096A: spare trays for above £0. 2. 3

Name: Bezique Marker
Source: RNIB
Availability: Supplier, above Cat. No. 9334: £0. 3. 9
A brailled device for recording by tens scores up to 9,990. It consists of a metal board with three columns of nine holes and three scoring pegs.

Name: Chessboard Covers
Source: RNIB
Availability: Supplier, above
Made of cardboard with leather cloth. The cover keeps the chessmen in place when games and problems are unfinished.

Cat. No. 9415: for large board	£0. 6. 6
Cat. No. 9416: for small board	£0. 6. 0

Name: Scoring Board
Source: RNIB
Availability: Supplier, above Cat. No. 9500: £0. 18. 0
This wooden scoring board has 13 sets of 10 holes each and one set of 18. A raised ridge around each hole indicates its position. Two pairs of pegs of contrasting colors are provided. These can also be distinguished by their shape.

PUZZLES

Name: Crossword Puzzle System
Source: AFB
Availability: Experimental prototype
The sets include brailled puzzle instructions, converted puzzles, boards and special brailled counters.

Name: All Square Novelty Puzzle
Source: RNIB
Availability: Supplier, above Cat. No. 9374: £0. 3. 0
Consists of a chequered board cut up into pieces as a jigsaw puzzle, each piece being made up of a number of squares. The black squares are embossed and the object is to assemble the pieces to form the chequered board. Solution supplied on request.

Name: Anchor Stone Puzzle
Source: RNIB
Availability: Supplier, above Cat. No. 9207: £0. 4. 9
Comprises seven small shaped pieces which can be rearranged into over 100 different designs. A book of problems in the form of embossed diagrams into which the pieces can be fitted is supplied with the set.

Name: Anchor Stone Puzzle Solutions
Source: RNIB
Availability: Supplier, above Cat. No. 9208: £0. 3. 0
A book of embossed diagrams which, in addition to the outline of each puzzle, has intersectional embossed lines showing how the pieces must be arranged to solve the problems.

Name: Block Puzzle
Source: AFB
Availability: Supplier, above Cat. No. GS57: $.70
Five horizontally placed blocks, shaped like dominoes, are flanked on one side by two vertically placed blocks of the same size and on the other by one such block. Object is to shift the square blocks from bottom corners to top corners without lifting any of the pieces. Extra pieces provide another puzzle (All-Day Puzzle), in which a large square, two small squares, two vertical rectangles and four horizontal rectangles must be juggled to shift positions.

Name: Brahma Puzzle
Source: RNIB
Availability: Supplier, above Cat. No. 9185: £0. 2. 0
The puzzle consists of three pegs on a wooden base and eight discs of different diameter with a hole in the center. The object is to transfer all the discs from one peg to another without allowing any disc to be placed over a smaller one.

Name: Hexed Puzzle
Source: AFB
Availability: Supplier, above Cat. No. GC58: $.85
Twelve plastic pieces, no two exactly alike, fit into a box 5½" x 9". Puzzle assembled at factory to prove it can be done. Over 200 possible solutions.

Name: Hi-Q Puzzle
Source: AFB
Availability: Supplier, above Cat. No. GC60: $.60
Plastic version of old game of Puzzle-Peg. Plastic pegs fit into holes in board. One of 33 holes left blank at start. Object is to remove all pegs except one by jumping as in checkers. Remaining peg to end in hole originally left blank. Excellent solitaire game which can be played with many variations. Inkprint instructions. Board 5¾" square and ¾" thick.

Name: Jigsaw Puzzles
Source: RNIB
Availability: Supplier, above
The puzzles are made of plywood and are so designed that the subject, being cut from thicker wood, is raised above the background and can be easily felt and put together. The subjects themselves are usually in color and are also interesting to partially sighted children. Embossed lines help to make the assembled picture realistic.

Cat. No. 9377: Alsatian	£0. 5. 0
Cat. No. 9477: Galleon	£0. 5. 9
Cat. No. 9204: Horse	£0. 5. 6
Cat. No. 9378: Irish Setter	£0. 5. 6
Cat. No. 9476: RMS Queen Elizabeth	£0. 9. 3
Cat. No. 9475: S.S. Chusan	£0. 9. 3
Cat. No. 9376: Windmill	£0. 5. 3

Name: Kwazy Kwilt Puzzle
Source: AFB
Availability: Supplier, above Cat. No. GC59: $.85
Twelve curved pieces, no two exactly alike, fitting in scalloped openings in 5½" x 9" box.

Name: Puzzle Peg Game
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $1.00
(Will be withdrawn when present stock is exhausted.)

SPORTS

Name: Bell-Equipped Playing Balls
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

Gymnastics ball, 51 cm circumference	6,60 DM
Gymnastics ball, 52 cm circumference	6,90 DM
Handball, 58 cm circumference	9,90 DM
Soccer ball, 67 cm circumference	12,90 DM
Medicine ball, 1000 g, 63 cm circumference	12,00 DM
Medicine ball, 1500 g, 69 cm circumference	16,95 DM
Medicine ball, 2000 g, 86 cm circumference	22,20 DM

Name: Bowling Rail
Source: AFB
Availability: Supplier, above
Aluminum portable bowling rail, 9′ long, 36″ high. Formed metal bases into which four bowling balls are placed for ballast. Parts slide together quickly. No attachments to alley or return racks. Carrying bag included.

Cat. No. GS44: Bowling Rail	$15.05
Cat. No. GS45: Bowling Rail Extension (Extends rail to 12′)	$ 1.35

Name: Electronic Rifle
Source: St. Dunstan's, London, England
Availability: Supplier, above
This rifle, a .22 miniature range type, is mounted on a swivel stand and maximum safety protection is afforded by the fact that it is constrained to fire only in the five-foot bullet trap area. When the rifle is trained on the bull, the marksman hears a very low note. Increasing deviation is indicated by an increase in frequency either through a loud speaker or earphones.

TOYS

Name: Audible (Electronic) Ball
Source: RNIB
Availability: Supplier, above Cat. No. 9201: £6. 3. 0
A soft foam rubber ball 6″ in diameter, containing a rechargeable transistorized oscillator which emits a "bleep" to permit location of the ball when in play. The sound unit operates for a period of 10 hours on one charge from a dry battery and is switched on and off by a plug.

Name: Rubber Audible Ball
Source: RNIB
Availability: Supplier, above
Made of strong, good quality rubber in which holes have been punched. A metal bell is inserted enabling the ball to be located when in play. Available in two sizes.

Cat. No. 9199: 3¾″ in diameter	£0. 3. 3
Cat. No. 9200: 5″ in diameter	£0. 4. 3

VOCATIONAL

DRAWING AND DRAFTING

Name: Compass
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 3,50 DM

Name: Compass
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $4.25
The device has a tracing wheel to draw circles up to 5½″ in diameter.

Name: Compass
Source: Lighthouse, Welfare Center for the Blind
Availability: Seiko-sha 70 yen

Name: Device for Reading Inkprint Drawings
Source: Polish Union for the Blind
Availability: Experimental prototype—1961
This device exists in prototype form in two versions. One uses a pencil-like probe containing a light source, lens system, a photoelectric cell grid, and leads. The output signal triggers a transistorized audio frequency output generator of 1 kc/sec when probe is held over the copy. The signal will be highest over the white portions of the drawing and lowest over the black portions. The signal is heard via earphones.
The variation permits embossing of drawings with braille-like dots by means of a pantograph arrangement of probe, motor propulsion, and electromagnetic embosser. The output of the probe drives the input of a 15 kc/sec transistorized amplifier. The amplifier serves to control a special electromagnetic transmitter provided with an embossing pin. The pantograph can be changed so that the produced convex drawings can be smaller or larger than the original. The probe contains five photodiodes, in contrast to the single cell of the drawing/reading probe described above. The rest of the system is multiplied as well for this purpose.
(See also Battelle Aural Reading Machine.)

Name: Draftsman's Compass
Source: AFB
Availability: Supplier, above Cat. No. MAM95: $4.40
The device is made of die-cast aluminum with a ballpoint pen tip. It is to be used with the Raised Line Drawing Kit. The regular size has four 4-inch arms but it is possible to secure extra tips to make the instrument into 8-inch dividers. There is a screw adjustment to open or close the instrument.

Name: Drawing Board
Source: Lighthouse, Welfare Center for the Blind
Availability: Daimaru Chemical Industry Co., Ltd. 170 yen
Covered by two different kinds of net on both sides, it makes lines and shapes very clear.

Name: Geometrical Compass
Source: RNIB
Availability: Supplier, above Cat. No. 9072: £0. 16. 6
The removable spur can be fitted in either of two positions. In the first position it is level with the point of the compass for drawing circles or arcs; in the second position it is adjusted for drawing straight lines. The embossed outlines appear on the reverse side of the paper.

Name: Geometrical Drawing Aid
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above 55,00 DM

Name: Geometry Mat
Source: RNIB
Availability: Supplier, above Cat. No. 9281: £0. 7. 0
A sheet of black rubber for use in conjunction with spur wheels and manila paper for making geometrical diagrams.

Name: Graph Board
Source: Lighthouse, Welfare Center for the Blind
Availability: Seiko-sha 150 yen

Name: Graph Marking Slate
Source: AFB
Availability: Supplier, above Cat. No. MAS96: $2.55
The Graph Marking Slate is for use with the Raised Line Drawing Kit. It has 24 cells and can be used as a single line only. A hollow stylus permits the writing of upright braille. This slate may also be used as a scale and a straight edge.

Name: Gravers
Source: Lighthouse, Welfare Center for the Blind
Availability: Kobayashi Iron Factory 12,600 yen
For use in embossing maps.

Name: Graver for Embossing Maps
Source: Lighthouse, Welfare Center for the Blind
Availability: Nakamura Braille Manufacturing Co. 4500 yen
One set (10 pieces) with hammer and wooden box.

Name: Naumberg Visagraph—Model I
Faximile Visagraph—Model II
Source: Veterans Administration, New York
Availability: Experimental prototype (discontinued)
Model I: This machine produces relief images from printed illustrations, symbols, and formulae. The photocell scans the copy and relays it to a circuit which activates the embossing stylus, raising dots on aluminum foil. The result is raised 4x copy in one direction, 5x in the other. (The copy is on one drum; the original on another.) For letters, the probable rate of reading is 25 wpm limited by finger design. The preparation is very slow.
Model II: The Faximile Visagraph is essentially an up-dated version of the Naumberg device. An enlarged embossed replica in aluminum foil is produced by a method similar to the scanning of photographs and facsimile reproduction over a wire service.

Name: Raised Line Drawing Kit
Source: AFB
Availability: Supplier, above Cat. No. WS194: $5.00
A method whereby blind people may draw or write and feel the lines on the top surface as the lines are made. The kit comprises a rubber covered drawing board with hold-down clips for 8½" x 11" material, a ballpoint pen filled with a colorless lubricant, and a package of polyester film sheets which serve as the "paper."

Name: Relievo Kit
Source: AFB
Availability: Supplier, above
Tubes of plastic paint which may be transferred to glassine needle cones for applying raised lines to paper, glass, leather, etc. Raised lines dry in about two days, remaining flexible. Texture may be varied by sprinkling while wet with glass lustre beads or rayon flock. Templets may be made over which checks or forms are laid so that the lines can be felt through the paper.

Cat. No. WC197. Relievo kit (includes 3 tubes of paint, cones, lustre beads and instruction chart)	$1.35
Cat. No. WC198: Relievo paint (economy size 2" x 11")	$7.20
Cat. No. WC199: Cones—envelope of 12	$ .25
Cat. No. WC200: White lustre beads—package	$ .30
Cat. No. WC201: Rayon flock—package	$ .20

Name: Sewell Embossing Set
Source: RNIB
Availability: AFB
A device for producing raised lines on the top surface of sheets of plastic film. The set consists of a special board, 70 sheets of plastic film and a modified form of ballpoint pen for use as a scriber. Additional plastic sheets are available.
Cat. No. 9173: Embossing Set (AFB Cat. No. W2S)
Cat. No. 9173A: Plastic film (in packets of 100 sheets)

Name: Spur Wheels
Source: RNIB
Availability: Supplier, above

Cat. No. 9083: Ordinary—for making continuous embossed lines. The lines are produced on the reverse side of the paper.	£8. 8. 0
Cat. No. 9084: Cantelo—for drawing embossed diagrams which are produced on the reverse side of the paper.	£0. 8. 9
Cat. No. 9183: Castor—for drawing curves and circles which are produced on the reverse side of the paper.	£0. 11. 6
Cat. No. 9438: Upward Embossing—for producing embossed lines upwards.	£0. 9. 9

Name: Tool Set for Making Mechanical and Technical Drawings
Source: Blindenstudienanstalt, Marburg/Lahn
Availability: Supplier, above
A pressboard sheet is fastened on an ordinary drawing board and a sharp steel pencil and suitably shaped compasses cut narrow furrows in the board. The edges of these furrows are tangible as well as visible.

Name: Tracing Wheel
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $2.25

Name: Vienna Marburg Drafting Kit
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
The device consists of stencils of the various items used in the laboratory.

ELECTRONICS

Name: Acoustic Oscillator
Source: Polish Union for the Blind
Availability: Supplier, above
Price unknown
No details available.

Name: Adapted Oscillator
Source: Technische Hogeschool
Availability: Experimental prototype
This device transforms oscilloscope traces into a tactile form. No other information available.

Name: AC Ammeter-Clamp-On/Hook-On
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
Adaptations of common clamp-on or hook-on ac ammeters have been made with the ac voltmeter circuit already developed by using a current transformer as with conventional meter movements. The output of the transformer is connected to the ac voltmeter provided with a calibrated scale marked off in ac amperes.

Name: AC Voltmeter
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
This meter is an adaptation of the dc voltmeter using potentiometer multiplier components, with the output of a rectifier/filter fed to the input terminals. The instrument is peak reading. If rms values are to be measured the voltage across the potentiometer is changed or the tap on the multiplier is changed.

Name: Audible Ohmmeter
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
A conventional Wheatstone bridge circuit uses a chopper and a headphone transducer at the center of the bridge, instead of a galvanometer. The calibrated element is a precision linear potentiometer fitted with a braille scale. The known side of the circuit is made up of resistances arranged in decades of ten. The operator connects the unknown resistor to the proper terminals, adjusts the potentiometer and range selector until a null occurs on the lowest range.

Name: Auditory Circuit Analyzer
Source: AFB
Availability: Supplier, above
This instrument embodies a multi-range, precision bridge type ohmmeter, a multi-range 20,000 Ω/v sensitivity dc voltmeter, a multi-range dc milliammeter. Measurements are obtained as nulls in an audible signal from a pair of headphones and readings are easily taken from a single raised scale. AC voltages may be measured by

connecting an external diode rectifier, rf voltages may be measured in a similar manner. Ranges available: 1-1000 v dc, 1-100 μA, 1-100 mA, O-1 A, 1-100 KΩ, 1-10 MΩ.

Cat. No. TS128: Analyzer without headphone and cushions $59.65
Analyzer with Trimm Commercial Headphone and cushions $66.45

Name: Auditory Circuit Analyzer
Source: Lynn Clinic for Physical Therapy, Dunn, North Carolina
Availability: Experimental prototype
This instrument, an auditory volt-ohm milliammeter, is read by hearing and touch and measures electrical resistance, direct voltage and current, and with a suitable rectifier and filter, peak ac voltage. The adaptation consists of the replacement of the original null indicator with one based on a sharp dip in pitch of a loudspeaker tone.

Name: Auditory Grid Dip Oscillators
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
These instruments use a dc amplifier/oscillator as an audible indicator. A multivibrator operating at audio frequencies receives its bias from the rf oscillator. As the bias changes due to loading of the tuned circuit by an external resonant circuit the pitch produced in the headset by the multivibrator produces an audible indication of change. Commercial grid dip meters are adapted by including the Auditory Gimmick inside the unit and a very small loudspeaker or headset in place of the meter movement.

Name: Capacitance Bridge—Inductance Bridge
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
These devices are built as simple ac bridges with provision made for a linear scale based on multiples of ten. AC current is supplied to the outer terminals and a headphone transducer is connected between the bridge centers.

Name: CIRTEST
Source: RNIB
Availability: Commercially $9.80
A simple pocket-size circuit tester which consists of a transistorized audio oscillator powered by a dry battery. It gives a clear audible signal on circuits up to 47 kohms resistance, with variation in pitch at different resistance values. The low short circuit current of 15 ma enables the directions of current flow through transistors and diodes to be verified without risk of causing damage.

Name: Component Tester
Source: St. Dunstan's, London, England
Availability: Supplier, above
This device is capable of testing resistors, capacitors, chokes, and miniature multiwinding transformers by a ten-pin tactile display. Failure on any one test is indicated by the appropriate pin rising above the nominal pass position.

Name: Continuity Meter
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
A simple continuity meter has been developed using a conventional relaxation oscillator with the resistance, inductor, capacitor, diode, etc., under test connected in series

with it. If the resistance is high the pitch of the sound from the auditory output is low. A low resistance gives a high pitched output signal. It may be adapted as a tuning indicator in a radio transmitter (class C) by connecting a low value resistor in shunt with the plate circuit; it may also be used as a light indicator by utilizing a photoelectric cell as the detector.

Name: DC Ammeter
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
The voltage across a precision calibrated potentiometer is nulled against the voltage produced across a precision resistance through which the circuit current is flowing. A chopper and headphone set provides the null indication.

Name: DC Voltmeter
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
This voltmeter consists of a potentiometer and resistance multiplier network. A chopper and headphone transducer are used to compare the voltage across a precision potentiometer and the voltage between the common side and the tap on a multiplier. Units having sensitivities in excess of 100,000 Ω/v have been built; standard voltmeters have a sensitivity of 20,000 Ω/v.

Name: DC VTVM
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
These meters use the conventional bridge type tube circuit with a metering circuit connected between the cathodes. If the instrument uses the standard visual meter movement a potentiometer and chopper compare the meter's voltage drop to that of a potentiometer. The voltage across the potentiometer is first made equal to the full scale voltage of the meter movement and the calibrated potentiometer scale is read in terms of the particular voltage range to which the instrument is switched. Audio frequency VTVMs are made with a similar indicating system.

Name: Electric and Electronic Meters
Source: St. Dunstan's, London, England
Availability: Supplier, above
The scales of these meters have been brailled and values of resistance, capacitance or inductance are taken when the balance point is signalled by a loud speaker or earphones.

Name: Electron Tube Tester
Source: Polish Union for the Blind
Availability: Supplier, above
For studying receiving tubes, voltage stabilizers, thyratrons and other tubes of relatively low power output, and testing tube condition. The instrument can measure anode current, screen current, isolation resistance between anodes and other tube elements. It will indicate breaks in filament, state of the vacuum atmosphere of the tube, etc. An external "index current" can be connected to the anode, cathode, or screen and permits the simultaneous examination of all relevant tube characteristics.

Name: Electronic Stroboscope
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
An electronic stroboscope uses an electronic photocell and light source powered from a dc supply. Light is reflected back from a stroboscope card and excites the

photocell. The output of the photocell feeds into an amplifier/loudspeaker arrangement. At the same time a source of 60 cps ac current is impressed upon another input channel so that both signals are mixed. A beat between the signals, indicates to the operator that a rotating turntable is either fast or slow.

Name: High Frequency Field Detector
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
This "auditory neon lamp" arrangement utilizes an external neon lamp connected across the leads of the Gunderson Continuity Meter to detect the presence of high frequency fields. The more intense the ionization of air due to the action of the radio frequency field, the lower the internal resistance of the lamp will be, and the higher the pitch of the audio output of the continuity meter. This device serves well as a tuning aid for the blind ham radio operator.

Name: Inductance Measurement Bridge
Source: Polish Union for the Blind
Availability: Supplier, above
No details available.

Name: Instrument Reading
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
A bell or buzzer which is triggered by a sensitive relay system is used to feed a transducer so that an audible signal indicates a point of contact. A relay is used in those cases in which electrical resistance across the contact points is too high for a simple series circuit arrangement. Thyratron relay is used in these cases. Among other devices incorporating such a relay system are a microammeter, an apparatus for measuring liquid levels, and certain types of voltmeters.

Name: Light Probe for Meter Pointers
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
This device utilizes the Auditory Gimmick in conjunction with a photoconductive type photocell (cadmium sulphide). This system provides excellent sensitivity when connected to the base emitter circuit of a dc amplifier in series with a voltage supply. The probe is mounted on a swivel and the outside edge of the instrument is equipped with dots corresponding to markings on the meter face.

Name: Master Auditory Meter Monitor
Source: Lynn Clinic for Physical Therapy, Dunn, North Carolina
Availability: Experimental prototype
With the use of this device, the blind radio amateur is able to read the visual meters in his various pieces of equipment. The Monitor provides an aural, i.e., pitch-related representation of meter reading. In addition it furnishes a series of comparison or reference tones to permit precise adjustment.

Name: Meter Reader
Source: National Research Council of Canada
Radio and Electrical Engineering Division
Availability: Experimental prototype
The meter relay is built around a conventional visual meter which carries a second pointer, manually controlled. When the second pointer coincides with the meter pointer a pair of auxiliary contacts is closed. The second pointer may be equipped with a braille scale, and the contacts connected to an audio generator/headphone combination.

Name: Meter Reader—Capacitance Coupled
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
These devices and their variations have been in use for a number of years. A conventional piece of test equipment may be adapted simply by mounting a capacity probe above the glass on a meter face using the capacitance formed between the meter pointer and the probe to detune one high frequency oscillator in a beat frequency oscillator arrangement. A howl is produced in a loudspeaker transducer and maximum pitch indicates that maximum detuning has taken place. The probe connected to a pointer which rides over a brailled scale on the edge of the indicating meter enables the blind operator to read the meter. A number of commercially available instruments such as multitesters, vacuum tube voltmeters, tube testers, etc., have been modified for use by the blind technician with this adaptation.

Name: Meter Reading Device
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
A four-diode bridge (modulator or chopper) works into an audio amplifier whose output is rectified and drives the biasing voltage for a multivibrator. Further variations involve the use of two radio frequency oscillators in a beat frequency configuration. One is reactance modulated by the voltage drop across a meter movement.

Name: Miniature Pocket Bridge
Source: Polish Union for the Blind
Availability: Supplier, above
Based on same principle as Resistance and Capacitance Measurement Bridge, with half-wave rectifier for resistance and capacitance measurements.

Name: Miscellaneous Null Reading Auditory Test Instruments
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
A number of additional instruments have been made utilizing the null principle of a standard Wheatstone bridge with a precision potentiometer/vibrator/headphone transducer element. These include a phase meter, a Q meter, a deviation meter, a transistor tester, an rf wattmeter, rf antenna bridges, an in-circuit checker (to measure electrolytic capacitors), a resonance meter, and special bridge circuits to compare time constants of large capacitors such as electrolytics, etc.

Name: Optical Lever
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
In addition to the simple mechanical methods of magnifying instrument scales or meter scales use can be made in special cases of the optical lever. In this system a narrow pencil of light is directed on a mirror which is attached to a rotating member of the instrument. The direction of the reflected beam is picked up by a photoelectric cell incorporated in a circuit which gives an audible output. The use of this type of magnifying device is indicated for applications in which exceptionally large degrees of magnification are required. This principle has been incorporated into a number of devices including: a micrometer screw guage, a spring balance, a microammeter, a torsion head ammeter, an apparatus for liquid levels, and a modified aneroid barometer.

Name: Oscilloscope Reader
Source: Research Council of Canada
Radio and Electrical Enginering Division
Availability: Experimental prototype
A harmonic distortion analyzer equipped with an auditory readout is substituted for the oscilloscope. In a second device an audible electronic counter, used as a timer, determines the time delay between two pulses or wave fronts. These devices are experimental, breadboard types of arrangements bordering on the use of technique rather than examples of truly unique adaptations for the blind.

Name: Precision Volt-Ohm-Milliammeter
Source: National Research Council of Canada
Radio and Electrical Engineering Division
Availability: Production prototype $40.00
A standard vacuum tube voltmeter is adapted for use by the blind through the use of a simple transistorized chopper, an amplifier, and a headphone transducer. It is based on the use of an inexpensive 20,000 Ω/v analyzer. The device measures less than 4″ x 6″ x 3″, weighs less than 2 lbs, and is shock free (plastic housing). The instrument cost includes conversion.

Name: Readout for Electronic Counters
Source: National Research Council of Canada
Radio and Electrical Engineering Division
Availability: Experimental prototype
A transistorized counter employs a set of 6.3 v lamps with a digital readout; the digital readout is replaced with solenoid-driven pins to form a raised matrix for the blind operator.

Name: Resistance and Capacitance Measurement Bridge
Source: Polish Union for the Blind
Availability: Supplier, above
Bridge equilibrium is signalled by an acoustic signal. Measured quantities are read on a plastic meter face suitably brailled.

Name: Servo-Voltmeter
Source: AFB
Availability: Experimental prototype
The meter is capable of presenting a tactile output from numerous measuring devices, mechanical, electrical light, heat and chemical.

Name: Subtraction Bridge
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
This device is used for the measurement of very small capacitance. The circuit uses two oscillators, one fixed and the other variable. The latter is adjusted for zero beat with the fixed circuit when the variable tuning capacitor is at nearly maximum capacitance. An unknown capacitance, in shunt with the variable capacitor, is identified by turning the variable element down until the zero beat condition appears. The value is then read off a dial scale calibrated in capacitance values in braille. The circuit uses two crystal controlled oscillator circuits set 1000 cps apart, and a variable oscillator, all feeding into a common mixer. Two versions are available, one using vacuum tubes and the other using transistors.

Name: Transistorized Auditory Gimmick
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
This device makes use of an oscillator preceded by a dc amplifier whose output adjusts the operating bias for the oscillator stage of a transmitter and thus of its operating frequency. The properly polarized input to a dc amplifier causes the pitch of the oscillator to rise as a meter pointer moves up scale and decrease with a lower meter setting. The tuning of a radio transmitter can thus be readily determined by the blind operator. This instrument also doubles as an absorption type wavemeter by feeding the input to the dc amplifier from the diode operating from a tuned input circuit which has been adjusted to resonance with the operating frequency. With an inductively coupled telephone pickup coil the Gimmick also functions as a remote tuning indicator. A number of variations on this circuit have been made to increase the precision of the readings of current.

Name: Tube Testers
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
Commercial tube testers have been adapted for the use of the blind by brailling the roll chart in older models, and by brailling the newer instruments using standard IBM cards with brailled-in tube type numbers. The output uses the indicating meter in the instrument as the voltage standard and a simultaneous translation into auditory output is made so that a sighted customer of the blind technician may discover the condition of his tubes as they are tested.

Name: Universal Resistance, Current and Capacity Meter
Source: Polish Union for the Blind
Availability: Supplier, above
Voltage range: 100 mv to 1000 v, ac and dc
Current range: 1 mA to 6 A, ac and dc
Resistance range: 10 mΩ to 10 MΩ
Accuracy: + or −4%, all scales

Name: VOM
Source: Verein der blinden Geistesarbeiter
Availability: Experimental prototype
A Wheatstone bridge circuit, consisting of potentiometer and two resistors, forms a null indicator through a chopper with an earphone output. The current range is 2 to 16 ma, voltage range of 0.05 to 1.3 volts. The instrument is equipped for two scales (one for voltage and one for current) which are nonlinear and differ from each other. With neon bulb supply it can be used for both dc and ac measurement up to frequencies as high as 25 kc/sec; with diode supply it is suitable for measurements of dc μa.

Name: Volt-Ohm-Milliammeter (VOM)
Source: E. W. Quay/Pennsylvania Association for the Blind, Harrisburg, Pennsylvania.
Availability: Experimental prototype
The device accepts the small voltage drop appearing across a visual ammeter and transposes it into a mechanical motion on a large clocklike dial. The voltage is amplified and used to trigger alternately one or the other of two thyratrons. These in turn activate a motor in one direction or the other. The motor is coupled to a large clocklike hand and to the shaft of a potentiometer. The resistive portion of the potentiometer is part of a voltage-dividing network supplying bias to the amplifier tubes. In practice the clocklike hand duplicates the readings appearing on the visual meter which has its terminals attached to the input of the device.

Name: Voltage Sensitive Oscillator
Source: National Research Council of Canada
Radio and Electrical Engineering Division
Availability: Experimental prototype
Through a unique arrangement of diodes in a feedback loop, the oscillator will go in and out of operation with a change of only 20 mv across its input terminals. A 2% accuracy in control or measurement is possible with this device.

FARMING

Name: Dairy Scale
Source: AFB
Availability: Discontinued in catalog listings
A Chatillon 60 pound capacity hanging dial scale with extra pointer for locking at zero when pail is in place. The scale carries inkprint graduations in tenths of a pound and registers 20 pounds. The pointer revolves three times to weigh up to 60 pounds. Braille dots indicate each half-pound, double dots each pound, and triple dots each 5 pounds.

Name: Poultry Scale
Source: AFB
Availability: Discontinued in catalog listings
A Chatillon 20 pound capacity hanging dial scale with poultry funnel adapted for touch reading. Triple braille dots indicate 0 and 5 pounds; double dots are at each pound and single dots at every 4 ounces. The pointer makes two revolutions to indicate up to 20 pounds. Funnel is stainless steel, 15″ deep, 9″ in diameter at the top and 3½″ at the bottom. The scale measures 8¼″ by 2″ thick.

Name: Sound Beacon
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
This device is intended for use in rural areas. It is mechanical in operation and uses the principle of a small windmill; a shaft on the windmill is fitted with an extension arm which rings a bell once each revolution.

Name: Radio Beam for Plowing
Source: Albert Newman, Cardigan, Wales
Availability: Experimental prototype—1960
This device enables a blind farmer to do his plowing by radio beam. Two small double aerials are planted on each side of the field to be plowed. The transmitter-receiver is fixed on the tractor and sends out a beam to the nearest aerial. The reflection is picked up by headphones. By gauging the pitch of this signal, the farmer can drive along the beam plowing a straight furrow.

HANDICRAFTS

Name: Peg Frames
Source: RNIB
Availability: Supplier, above
Enamelled metal frames for making string bags and articles of a similar nature.

Cat. No. 9479: circular frame 7¾″ in diameter	£0. 12. 3
Cat. No. 9480: circular frame 12¾″ in diameter	£0. 18. 3
Cat. No. 9481: oblong frame 14″ x 2″	£0. 12. 3

MEDICAL

Name: Clinical Thermometer
Source: AFB
Availability: Supplier, above Cat. No. NEM195: $8.75
An unbreakable, dial type clinical thermometer with a ⅛″ stem extending for 2½″ from one side of the 1⅛″ dial. On the opposite end is a button which connects the pointer and holds the temperature reading indefinitely. When the button is pulled out, the needle is returned to zero. The range is 94 to 108 degrees Fahrenheit. The scale is marked with one raised dot at each odd number and two at each even number, and a raised line at 98.6 degrees. Black inkprint markings.

Name: Diabetic Diet Scale
Source: AFB
Availability: Discontinued in catalog listings
This platform scale has a 500 gram capacity with braille dots at each 10 grams, double dots at each 50, and triple dots at each 100. The scale may be moved to register zero after the container has been placed on the platform.

Name: Electrotherapical Apparatus
Source: Lighthouse, Welfare Center for the Blind
Availability: Iko-sha 2300 yen

Name: Interval Timer (U.V.L.)
Source: RNIB
Availability: Supplier, above Cat. No. 9190: £4. 7. 0
For ultra violet light. This device is a modified version of a standard interval timer introduced to meet the needs of physiotherapists requiring an instrument to advise them of the duration of specific intervals up to a maximum of 10 minutes. In addition to the main alarm, it also gives a ring at each half-minute interval.

Name: Liquid Measure
Source: RNIB
Availability: Supplier, above
For measuring one fluid ounce for clinical purposes only. The bottle cork and measure can be supplied separately.

Cat. No. 9448: Measure, bottle and cork washer	£0. 14. 9
Cat. No. 9448A: Measure only	£0. 13. 3
Cat. No. 9448B: Bottle only	£0. 1. 0
Cat. No. 9448C: Cork washer only	£0. 0. 6

Name: Liquid Thermometer
Source: AFB
Availability: Experimental prototype
For use by x-ray technicians, this device is a temperature sensitive nickel-wire probe/Wheatstone bridge, which when out of balance, triggers an audible output. A servo-controlled indication has been developed to replace the audible output.

Name: Low-frequency Electrotherapical Apparatus
Source: Lighthouse, Welfare Center for the Blind
Availability: Seiko-do Electrotherapical Apparatus Manufacturing Co.
Portable Model—specially devised for the use of the blind with sound effect and easy operation. 32,000 yen

Table Model No. 1—specially devised for the use of the blind; synthetic switchboard with three poles. 70,000 yen
Clinical Model No. 1—devised by the blind for use of the blind; synthetic switchboard with five poles. 130,000 yen

Name: Low-frequency Electrotherapical Apparatus
Source: Lighthouse, Welfare Center for the Blind
Availability: Suzuki Medical Instruments Manufacturing Co., Ltd. 60,000 yen
Low-frequency therapical apparatus, 42 x 23 x 27 cm.

Name: Sphygmomanometer
Source: AFB
Availability: Supplier, above Cat. No. MEM104: $42.00
Standard Tycos sphygmomanometer of the aneroid type may be adapted on request for those required to take blood pressure measurements. The glass is removed and raised dots are placed around the bezel at each 20 mm of pressure, and notches are filed at each 100 mm. The needle is bent up to permit easy reading. A lens cover is provided to protect the instrument when not in use.

Name: U.V.L. Interval Timer
Source: AFB
Availability: Supplier, above Cat. No. CM36: $14.05
Spring wound with total capacity of 10 minutes only. Weak ring at each half-minute interval and alarm which sounds for about 15 seconds at end of period for which timer was set. Raised indications at each minute interval and small raised dots at each 15-second interval. Case of black, crackle-finished metal with nickel-plated bezel, levers and top carrying ring. Size 4¼″ x 4¾″ x 2″ thick. Weight 1 lb, 2 oz.

MENSURATION AND COMPUTATION

Calculators and Calculating Aids

Name: Abacus
Source: Martin Mahler, Mah-Zell Precision Products
Availability: Production prototype (probably discontinued)
This device has been modified to one four-bead arrangement with grommets fitted onto bolts extending above and below a divider. Not found comfortable to use.

Name: Abacus for the Blind
Source: Lighthouse, Welfare Center for the Blind
Availability: Seiko-sha 600 yen

Name: Abacus for the Blind
Source: Lighthouse, Welfare Center for the Blind
Availability: Suzuki Industry 880 yen
The abacus consists of a wooden frame and plastic beads and has special devices to fix the beads.

Name: Cranmer Abacus
Source: T. V. Cranmer, Frankfort, Kentucky
Availability: Experimental prototype
The abacus is rectangular in shape. It measures 5⅝ inches long by 3⅛ inches wide and is approximately ½ inch thick. Anchored to the plastic frame are 13 rods made

of music wire. These rods travel the width of the frame and are ⅜ inch apart. Running the length of the frame, there is a bar 3/16 inch wide. This bar cuts across each rod or column. Upon each column, 5 beads are strung, of these 4 are on one side of the bar while the fifth bead is on the other. These beads have a diameter of 0.275 inch.
Behind the 13 columns, sandwiched between them and the back of the abacus, is a pad of felt over foam rubber. It is this pad which offers the necessary resistance to bead travel and makes the abacus usable by a blind operator.

Name: Japanese Soroban
Source: I. Myato, Sao Paulo, Brazil
Availability: Experimental prototype—1959
This device has been modified so that there are four beads per column in units with a single bead in the fives' unit damped by the addition of gum and sponge rubber.

Name: Calculator
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
The device is furnished with brailled inscriptions. Further information and price on request.

Name: Calculator
Source: Van Veen Calculators, Avon, Connecticut
Availability: Not Known
This machine, reading to four places, was adapted via braille numerals for use by the blind. Its deficiencies in field trials discouraged use of the machine by the visually impaired.

Name: Electric Desk Calculator
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
This is a normal calculating machine bearing braille figures in the counting unit and having suitably marked keys.

Name: Geometrical Aid
Source: M. Espinasse, 15 Rue Maët, Paris 6eme, France
Availability: Supplier, above approximately 100 NF
Designed as an aid to the blind mathematician, this device allows him to utilize geometrical figures in measuring and calculation; it is also useful for teaching purposes. This device was described in detail in the March 1961 issue of *Lux Vera* (in French).

Name: Log-Log Decitrig Slide Rule
Source: Keuffel and Esser
Availability: Supplier, above—(discontinued)
This brailled rule was custom made. It may be produced again.

Name: Slide Rule
Source: AFB
Availability: Suppliers, above Cat. No. MAS98: $2.70
The slide rule is of the circular type and consists of a logarithm "C" scale around the outer edge with large embossed Arabic and braille numerals, and a set of pointers, two on the face and one on the back. Pointer "A" is set on 1 and pointer "B" on the

multiplicand and both are locked together. Pointer "A" is moved to the multiplier and the product read at pointer "B." The pointer on the back side is rigidly affixed to pointer "A," and when "A" is set on a number the square root can be read on a linear scale.

Name: Punched Card Reader
Source: F. Dado, V. Proscia, and M. Raphael, Columbia University Engineering Center, New York
Availability: Experimental prototype
The card reader consists of a card holder with a linear braille scale, a gear-driven slider, reading brushes, and a musical-code indicator. To read a card, the operator moves the brush carriage over the columns to be read. A single or double tone will be heard at each column and will be broken down before the tones for the next column are connected.

Name: Punched Card Reader
Source: Minneapolis-Honeywell Regulator Company
Availability: Experimental prototype—1958
The device employs a set of electrical brushes which are passed over the card and indicate a punch by completing a circuit through the punched hole. Since the standard punched card consists of 80 vertical columns of 12 numbers each, a set of 12 brushes is moved by a carriage across the card from column 1 to column 80. This device is presently being used as an aid in programming the IBM 650 computer.

Name: Summit Adding Machine
Source: AFB
Availability: Experimental prototype—(discontinued)
This commercially available miniature adding machine could be brailled and thereby adapted for use by the blind. The machine did not trigger 9's automatically, however, and was consequently dropped.

Calipers and Comparators

Name: Caliper
Source: De Blindas Förening, Stockholm, Sweden
Availability: Production prototype
A caliper used by the sighted metal worker for the rapid control of measurements with a tolerance of 0.1 mm has been adapted for the blind. Its nonary on a rotating disc makes one revolution per cm. The periphery of the disc is divided into 9 sections of equal size which, if compared to a 10-section scale marked beyond the disc, marks a deviation of 0.1 mm for every section of the disc. The guage is provided with clearly marked characters which can be read even by calloused fingers.

Name. Calipers
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
An adaptation of ordinary calipers for use by the blind. A turn of the screw represents 1 mm so that thickness can be measured to .01 mm precisely.

Name: Calipers, Inside
Source: AFB
Availability: Supplier, above Cat. No. TM147: $2.90
Adapted for tactual reading. One raised dot at every ⅛″ interval, 2 raised dots each ½″ interval and 3 raised dots every 1″ interval; ½″ to 4″ scale. Narrow tips

for insertion through a ½" hole. Squeezing handle opens the caliper; a spring closes it gently on the work. The thumbscrew locks the caliper at any mid-scale position for use as a gauge.

Name: Calipers, Outside
Source: AFB
Availability: Supplier, above Cat. No. TM148: $3.10
Same as TM147 (Calipers, Inside) except 0" to 4" scale.

Name: Calipers, Vernier
Source: AFB
Availability: Supplier, above Cat. No. TM146: $1.35
These inkprint vernier calipers are intended primarily for use with gauge blocks TS-145. The inkprint scales cannot be read by touch, but provide a very handy comparator; have a 5" capacity, with interlocked inside, outside, and depth measuring devices; a knurled wheel for easy setting and knurled nut for locking.

Name: Micrometer Caliper
Source: St. Dunstan's, London, England
Availability: Supplier, above
The visual linear scales of the standard micrometer have been augmented by braille scales around the circumference of two enlarged rotatable drums. A third stationary drum is provided with a raised datum line. Braille numerals and subdivisions on the two rotatable drums are checked against this datum when taking a measurement. A short Vernier scale is embossed just below the raised datum line permitting a direct reading accuracy of .0002 inch.

Name: Precision Caliper Gauge
Source: St. Dunstan's, London, England
Availability: Supplier, above
This instrument, an adaptation of the Vernier caliper, has been devised to obtain more uniform and accurate readings than with ordinary calipers and steel rules. The device has a range of 0 to 10 inches in increments of .001 inch, indicated by audible clicks.

Name: Stanley Caliper Rule
Source: AFB
Availability: Supplier, above Cat. No. TM149: $3.15
This rule has two main parts. The sliding jaw has a raised scale graduated in ⅛" marks indicated by a single raised dot. For quick reading, the ½" mark has 2 raised dots and the 1" mark has 3 raised dots. The stationary jaw has 2 raised dots on the face to indicate inside and outside measurements. Inside measurements are made by using the small ends on the stationary and sliding jaws. The other side of the calipers has a 5" ruler with raised indications.

Name: Comparators
Source: St. Dunstan's London, England
Availability: Supplier, above
Comparators used to check and amplify small dimensional variations on the workpiece are adapted to give them an auditory output where indicating or alarm signals are involved. These include mechanical linkage types, electric contact, electronic circuit, pneumatic and manometric/pneumatic comparators.

Gauges and Gauge Blocks

Name: Dimension Indicator
Source: St. Dunstan's, London, England
Availability: Supplier, above
A device with both printed and braille numerals which enables a blind person to check a series of dimensions against machine drawings.

Name: Gauge and Electronic Gauge Box
Source: Timken Roller Bearing Company, Canton, Ohio
Availability: Experimental prototype
This device has been designed to enable a blind person to inspect products between 1½" o.d. and 7⅜" o.d. in size. The electronic device, when connccted to a standard gauge and properly calibrated, emits three different and distinct tones from a small cone-type speaker located in a control box directly in front of the operator. The highest of these three tones indicate an O.K. workpiece. The higher of the two lower tones indicates an oversized workpiece and the lower tone indicates an undersized workpiece.

Name: Inspector's Gauge
Source: Standard Gage Company, Inc., Poughkeepsie, New York
Availability: Supplier, above
A general purpose gauge designed for use by blind inspectors. Undersize and oversize tolerance zones are identified by three tone buzzers which permits classification of workpiece sizes by sound. Switch points, which activate the buzzers, repeat within .000003". There is also an option light panel whose colored lights correspond to the buzzer zones on the dial. The gauge can be changed from i.d. to o.d. operations by a simple control switch.

Name: Tire Pressure Gauge
Source: AFB
Availability: Supplier, above Cat. No. TM132: $2.85
Over-sized gauge of plunger type which can be read to an accuracy of 1 lb. Notches appear around the four sides of rectangular plunger. Four-pound graduations have been deepened to distinguish them from others. Notches progress clockwise around rod in advance of 1 lb. Capacity: 4-50 lbs.

Name: Wood-Marking Gauge
Source: AFB
Availability: Supplier, above Cat. No. TS157: $4.55
Combination try square and wood-marking gauge employing the same pattern as the Cast Aluminum Rule. Slide may be locked at any setting. Removable brad awl point for making tangible lines on wood.

Name: Gauge Blocks
Source: AFB
Availability: Supplier, above Cat. No. TS145: $2.85
Set of three steel blocks making it possible to set any dimension by sixteenths up to 3". When used with calipers these blocks give extremely accurate results. Treated to reduce rusting. Block A measures 1" x ½" x ⅛", milled across width to 1/16" for 7/16". Block B measures 2" x ¾" x ⅜", milled across width to 3/16" for ⅞". Block C measures 3" x 1¼" x ¼", milled across width to ⅛" for 1¼".

Name: V-Way Gauging Block
Source: AFB
Availability: Commercially (several sources)
The device is used in conjunction with a micrometer adapted for use by the blind and supplied by AFB.

Name: Tabular Information Readings
Source: St. Dunstan's, London, England
Availability: Supplier, above
Data comprising tables of drill and screw thread sizes, metric conversions, decimal equivalents of fractions, etc. are brailled directly onto thin zinc plates for ready reference.

Name: Triangle
Source: Lighthouse, Welfare Center for the Blind
Availability: Seiko-sha 180 yen

Levels

Name: Electric Level
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
A glass tube partly filled with mercury has electric contacts fused in a glass at each end. When the instrument is at the desired angle a buzzer sounds from the completion of circuit through the mercury which is in the desired (perhaps precalibrated) setting.

Name: Electric Level
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
A variation on the pendulum principle of level uses a calibrated dial base. A buzzer rings from completion of circuit between pointer and calibrated dial contacts unless the angle of the device is that of the preset value. Instrument usable in any position except upside down.

Name: Electric Level
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
Each of the calibrated points of the dial on the level is wired, as is the pointer, to a source of supply and a buzzer. Desired dial reading is energized by a moving contact at the back. When the level is placed on the material to be measured the pointer comes to rest on an energized contact point and a buzzer rings indicating the correct angle.

Name: Electronic Level
Source: AFB
Availability: Experimental prototype
A model with tactile output now under development. This device depends on the use of a sensitive pendulum and microswitch arrangement which, when out of balance, causes an audio oscillator to trigger a buzzer.

Name: Mechanical Level
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
A pendulum is suspended from a point 8″ to 10″ above the base to form the level. The instrument can be used only on the surface of an object in the plane of the horizon.

Name: Mechanical Level
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
A dial calibrated every 15 degrees is fastened to the center of a bar of metal 12″ long, 1″ wide, and ½″ thick; the dial is at right angles to the 1″ face. A 3/16″ rod, inserted through the dial into the center of the rod, has a weighted pointer. An angle can be determined by touching the pointer without disturbing the reading since the pointer which comes to rest is locked in position by tightening a nut. Instrument can be used in any position and has a zero adjust.

Micrometers

Name: Micrometer Depth Gauge
Source: St. Dunstan's, London, England
Availability: Supplier, above
The measuring head of this device is mounted on a base with provision for inserting measuring rods through the center of the assembly. A set of rods permits the gauging of holes from 0 to 6 inches deep. The instrument is adapted to have a braille output.

Name: Micrometer Screw Gauge with Braille Scale
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
A 4½″ long, ¾″ diameter bright steel screw separates two steel plates 6½″ in diameter and ¼″ thick. On the upper plate a braille scale is embossed on an aluminum sheet with 100 divisions with numerals from zero anticlockwise. At the upper end of the apparatus a 1″ diameter 1″ long cylindrical head is fitted with an arm holding at its end a square sectioned brass rod over the embossed braille scale on the periphery. A pointer falls over the braille indications at the end of this square rod. The object to be measured is inserted between the jaws of the gauge, the scale is raised in the slot and held by a screw, the screw is then turned clockwise until contact is just felt with the upper surface of the object being measured. The square brass scale is then lowered until the pointer rests on the scale plate. The instrument is capable of readings to 0.001″ but the primary intention of the design is pedagogic rather than for engineering practice.

Name: Starrett Micrometer—AFB Model
Source: AFB
Availability: Supplier, above
Modification of standard Starrett micrometer for fingernail reading. Graduations on thimble have been deepened and raised dots added. All graduations deepened on sleeve. The .100″ graduations appear only over zero line. The .050″ markings are carried below the zero line, while the .025″ and .075″ markings appear above the zero line.

Cat. No. TM150: 0″ to 1″	$27.55
Cat. No. TM151: 1″ to 2″	$28.64
Cat. No. TM152: 2″ to 3″	$31.65
Cat. No. TM153: 3″ to 4″	$32.20

Name: Starrett Depth Micrometer
Source: AFB
Availability: Supplier, above — Cat. No. TM154: $35.00
Interchangeable rods provide 0″ to 3″ measurements. Adapted for fingernail reading incorporating the same system described for the Starrett Micrometer. Provided with finished wood case.

Protractors

Name: Braille Bevel Protractor
Source: St. Dunstan's, London, England
Availability: Supplier, above
A useful bevel protractor which enables angles to be measured with a high degree of precision. Any given angle may be determined on the embossed braille scales which are graduated in degrees from 0 to 90 each way. The adjustable blades can be clamped in any position while the measurement is taken.

Name: Protractor
Source: AFB
Availability: Supplier, above Cat. No. MAM97: $.70
Transparent, semicircular protractor with 3″ radius and a 6½″ pointer, pivoted at the protractor's center. Single raised braille dots at each five degrees, with double raised dots at each ten, and triple raised dots at 45, 90, and 135 degrees. Not for close measurements.

Name: Protractor
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $1.50
The device is semi-circular, and transparent with a 6½″ pointer. There are single braille dots at each 5 degrees, double dots at each 10 degrees, and triple dots at 45, 90, and 135 degrees. The protractor is not designed for close measurement.

Name: Protractor
Source: Lighthouse, Welfare Center for the Blind
Availability: Seiko-sha 180 yen

Name: Protractor
Source: RNIB
Availability: Supplier, above Cat. No. 9184: £0. 5. 0
An adaptation of the standard plastic article, the various degrees being marked by raised dots. A swivel setting arm is provided.

Rules, Rulers, and Yardsticks

Name: Cast Aluminum Rule
Source: AFB
Availability: Supplier, above Cat. No. TS158: $2.00
Foot rule graduated in 16ths of an inch. Braille numerals at each inch. Variegated raised markers are offset to permit fingernail to drop into correct grooves, which run to thin edge of rule. Raised marks at each quarter; intermediate sixteenths determined by counting grooves.

Name: Click-O-Matic Rule
Source: AFB
Availability: Supplier, above Cat. No. TS162: $4.85
A 12 ″ rule which has concentric grooves cut at each 1/16″. The nut slides along the rule, giving clicks because of a spring-loaded ball bearing. A lock nut makes possible setting dimensions. Resembles Rotomatic Rules, except not quite as accurate, but more rapidly set.

Name: Folding Boxwood Rule
Source: RNIB
Availability: Supplier, above Cat. No. 9383: £0. 8. 6
Folds into four sections and marked with a single metal dot at a slightly higher elevation at every half-inch. The number of each inch is shown in braille.

Name: Folding Steel Rules
Source: RNIB
Availability: Supplier, above
Folds into four sections and marked with slots of different depth for half and one-inch divisions. The first inch is slotted in eighths and the last in quarters.
Cat. No. 9361: 24-inch £1. 3. 0
Cat. No. 9465: 36-inch £1. 14. 6

Name: Foot Rule
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $1.20
Metal, with quarter-inch markings.

Name: Foot Rule
Source: RNIB
Availability: Supplier, above Cat. No. 9071: £0. 9. 0
Nickel-plated brass 12″ foot rule with inch and ⅛″ positions marked by slots. Inches are indicated by a dot and the 6″ position by two dots.

Name: Foot Rule with Metric Measurements
Source: RNIB
Availability: Supplier, above Cat. No. 9466: £0. 12. 9
Nickel-plated brass 12″ rule, one edge divided into inches, the other edge into metric markings.

Name: Moulded Plastic 1-Foot Braille Ruler
Source: APH
Availability: Supplier, above $.50
This ruler is moulded of plastic with raised lines indicating eighths, fourths, halves, and inches, and braille figures at inch divisions.

Name: Rotomatic Rule-6″
Source: AFB
Availability: Supplier, above Cat. No. TS159: $2.65
An aluminum rule which can readily be read to 1/64″. A length of ⅜″ aluminum rod is threaded, 16 threads to the inch. On one side a flat is milled away, and a similar flat is milled on the opposite side to leave raised graduations at each ½″. A rectangular nut is fitted to the rod with a mark placed at one end of a wide side, so that this is opposite the raised graduations when the nut is at "0." As the nut is backed away, each ¼ turn represents an additional 1/64.″ Round lock nut for setting and holding any dimensions.

Name: Rotomatic Rule with 6″ Extension
Source: AFB
Availability: Supplier, above Cat. No. TS160: $3.10
Identical with TS159 but with starting end of the rule to receive a plain 6″ threaded extension.

Name: Rules
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Wood—1 meter	3,65 DM
Wood—2 meters	5,50 DM
Lightweight metal—1 meter	4,25 DM
Lightweight metal—2 meters	6,00 DM
Linen tape measure—1½ meters	2,40 DM
Micrometer—1/100 mm divisions; measurement range 0 to 10 mm, with case	42,35 DM

Name: Vernier Rule
Source: St. Dunstan's, London, England
Availability: Supplier, above
An instrument with a range of 0 to 6 inches and an accuracy of .0025 inch, it permits the checking of internal and external dimensions. In addition, depths up to 6 inches can be measured.

Name: Rulers
Source: Lighthouse, Welfare Center for the Blind
Availability: Seiko-sha

Metal ruler, 30 cm	130 yen
Bamboo, 30 cm	100 yen
Ruler, 20 cm	100 yen

Name: Measuring Devices
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

Tape measure, 150 cm long	1,50 DM
Wood measuring stick, with divisions, 1 meter long	1,80 DM
Folding foot rule, 1 meter long	2,00 DM
Folding foot rule, 2 meters long	3,00 DM

Name: 6′ Steel Tape (Lufkin "Mezzurall")
Source: AFB
Availability: Supplier, above Cat. No. TM165: $1.50
Flexible steel rule which slides back into the case, with raised markings. The first 6″ have dots at each ⅛″, double dots at each ½″, and triple dots at each 1″. The next 6″ have a dot at each 1″ with a double dot at 12″. The second foot has a dot at each 2″ with a double dot at 24″. Following that there are single dots at each 6″ and double dots at each foot. The case measures ⅝″ thick and 2″ square and weighs 3 oz.

Name: Stanley Combination Square
Source: AFB
Availability: Supplier, above Cat. No. TM155: $4.80
This tool can be used as a straight edge rule when the handle is removed, an outside try square, a mitre square, an inside try square, a depth guage, and a marking gauge. The handle is 4½″ long and slides along the scale. There is a raised dot at every ⅛″ interval, 2 raised dots at every ½″ interval, and 3 raised dots at every 1″ interval for the entire length of the scale. This model also includes a level and scriber. The scriber is kept in the bottom of the handle. The level cannot be used by a blind person.

Name: Stanley Flat Steel Framing Square
Source: AFB
Availability: Supplier, above Cat. No. TM156: $7.45
The tool is 12″ x 18″ and can be used as a square, a ruler, and straight edge. Marked with one raised dot at each ⅛″ interval, 2 raised dots at each ½″ interval and 3 raised dots at each 1″ interval. Inside and outside edges of tongue and blade are marked.

Name: 25′ Steel Tape (Lufkin)
Source: AFB
Availability: Supplier, above Cat. No. TM167: $4.40
First 11″ marked with a raised dot at each inch, two raised dots at 12″. The remainder of the tape has been marked with one raised dot at each foot interval, two raised dots at 5′, 15′, and 25′ and three raised dots at the 10′, and 20′ intervals. Tape is pulled from the housing and wound back into the case. End hook is fastened for convenience in measuring.

Name: Telescopic Click Rule
Source: AFB
Availability: Supplier, above
An aluminum rule which clicks at each 1/16″, has raised graduations at each ½″, slides into a 7⅝″ housing, and is fitted with a knurled locking screw, riding along a slot in the housing. Six inches back from the starting end is a shoulder, ¼″ thick, which makes possible the taking of inside measurements from 6¼″ to 12¼″. Depth measurements up to 6″ and outside measurements up to 12″ can be taken accurately to 1/16″. The outer end of the slide is threaded to receive plain extension rods of 12″ or 24″ lengths so device can be used as yard stick.

Cat. No. TS163: Rule	$5.45
Cat. No. TS164: Rule with Extensions	$6.55

Name: Two-Foot Rule
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $2.00
Metal with quarter-inch markings.

Name: Yardstick—Metal
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above $2.25

Name: Yardstick with Foot Rule
Source: RNIB
Availability: Supplier, above Cat. No. 9339: £0. 16. 6
The yardstick has no braille or other markings but is fitted with a brass foot rule at the 12″ position. This swivels on a pivot to cover the first or second 12 inches of the yardstick.

Name: Rotomatic Yard Stick
Source: AFB
Availability: Supplier, above Cat. No. TS161 $4.85
Similar to TS159 except that the marked section covers 12″, and 1 and 2 ft. extensions are included.

Weigh Scales

Name: Grocer's Scale
Source: AFB
Availability: Discontinued in catalog listings
Detecto-matic hanging spring scale with 15 pounds capacity and 15 inch dial. The dial is marked to five pounds and the pointer revolves three times for full weight capacity. Braille dots indicate each ounce, double dots at each quarter pound and triple dots at each pound. It is available with porcelain enamelled pans, flat pans, vegetable scoop, or cracker scoop.

Name: Weigh Scale
Source: De Blindas Förening, Stockholm, Sweden
Availability: Production prototype
The adapted weigh scale depends on the mounting of a photocell/buzzer arrangement on a frame in front of the black pointer hand of a standard weigh scale which has a white scale face. When the pointer passes the preset probe point the buzzer sounds thus indicating the weight.

Name: Weigh Scale
Source: National Research Council of Canada
Radio and Electrical Engineering Division
Availability: Production prototype
Two models of this device have been made. The first utilized a simple friction clutch of fiber discs attached to the pointer of a standard spring balance. Pressure on the clutch was released until balance came to rest and the pointer was clamped so the the user could feel its position.
The second model, a more suitable device, is based on the Computogram scale made by the Toledo Scale Company. Glass covering the scale was removed, the point and face were painted black, a white line was painted on the center of the pointer, and a new front cover made of plexiglass has a braille scale at 1 oz intervals. An external pointer is mounted coaxially with the internal pointer, and is statically balanced and slightly friction-loaded by a simple fiber clutch. At the end of the external pointer a photocell optical probe is installed. When the two pointers are in line light is reflected from the white center line of the first pointer through the lens/photocell arrangement of the optical probe on the second pointer. The readout equipment consists of a transistorized audio frequency blocking oscillator, and audio amplifier, and a loudspeaker.
In use the probe pointer is moved until the pitch heard on the loudspeaker is at a maximum. Reading accuracy: less than ½ oz. Measurement time about 5 sec.

MUSIC

Name: Liessens Music Writer
Source: AFB
Availability: Supplier, above $5.00
This device consists of a metal frame with a metal notation guide that slides horizontally within the frame. The metal frame is clamped to a writing board. The guide has perforations for treble and bass clefs and cresendo and diminuendo symbols. There are rectangular spaces of various sizes for adding accidentals and other symbols. Vertical spaces having a straight edge on one side and a series of semicircular grooves on the other aid in drawing note-heads. A note-head may be placed on any line without unclamping the frame from the writing board.

Name: Mayhew Music Indicator and Carrying Case
Source: RNIB
Availability: Supplier, above
The frame enables the blind music teacher to teach Staff and Tonic Sol-fa Notations to sighted pupils. A set of four printed cards is provided. By means of a slide at the back of the frame, the teacher may display in the window any one of 80 symbols (63 Staff Notation, 17 Tonic Sol-fa). Replacement cards are available.

Cat. No. 9310: Frame	£1. 13. 0
Cat. No. 9310A: Replacement cards (per set)	£0. 3. 0
Cat. No. 9310B: Carrying case	£1. 4. 0

Name: Staff Notation Guide
Source: RNIB
Availability: Supplier, above — Cat. No. 9311: £0. 18. 0
A metal guide to assist blind teachers of music in demonstrating to sighted pupils the first simple time values in Staff Notation. Designed for use with the small size interlining board (Cat. No. 9017C).

OFFICE AND CLERICAL

Clerical

Name: Bookkeeping Frame
Source: RNIB
Availability: Supplier, above — Cat. No. 9275: £1. 17. 6
The metal guide is specially constructed for making double entry bookkeeping records. It is designed for writing on one side of paper measuring 14¼" x 13".

Name: Dividers for Letter Size Files
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
These dividers are adapted with brailled notation tabs.

Dividers	4,80 DM
Tabs	0,45 DM

Name: Index Card Case with Cards
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above

Large	10,60 DM
Small	9,90 DM

Name: Plastic File Cards
Source: AFB
Availability: Supplier, above
Vinylite file cards similar in appearance to ordinary cardboard, taking ink, pencil or typing as well as braille. The cards are .010" thick, making the braille virtually indestructible, although it can be written on either slate or machine. Intended only for constantly used permanent file records.

Cards	
Cat. No. MC212: 3" x 5" (pkg of 25)	$ .80
Cat. No. MC213: 4" x 6" (pkg of 25)	$1.25
Separators	
Cat. No. MC214: 3½" x 5" (pkg of 10)	$ .45
Cat. No. MC215: 4½" x 6" (pkg of 10)	$ .70

Shorthand Writers and Accessories

Name: Marburg Braille Stenography Machine
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 264,00 DM
This machine is a variation of the Marburg braillewriter, in which the paper roller and associated mechanism is replaced by a continuous strip of paper, fed from a roll contained in the machine, which is wound onto an external roller after brailling. It is designed to be used in the stenography system comprising this apparatus, and the reading apparatus consisting of a home-movie-style paper tape transport editing system. The apparatus is cleanly styled and lightweight.

Name: Marburg Eight-Dot Shorthand Typewriter
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
Two dots have been added to the normal braille cell. The eight-dot cell can encode four times as much information as the normal braille cell and a speed of 300 syllables per minute can be attained.

Name: Neubert Braille Shorthand Typewriter
Source: Neubert, Offenburg/Baden, Germany
Availability: Supplier, above
This device is similar to the Marburg Braille Shorthand Typewriter with a keyboard of six keys and a spacing bar. The braille symbols are also embossed on paper tape.

Name: Perkins Shorthand Writer
Source: Howe Press of Perkins School for the Blind
Availability: Supplier, above
This writer uses standard 15/16" wide tape. The keys are made of wood and the housing of formed aluminum. The external paper feeding mechanism on this model is self-contained.

Name: Seifried Shorthand Machine
Source: Chicago, Illinois
Availability: circ. 1910—(discontinued)
This machine was intended for taking notes in braille on a roll of paper tape. It incorporated the approach of using a die assembly as a paper feed roller. When the paper reached a certain minimum point, it automatically tripped a bell.

Name: Stainsby Shorthand Writer
Source: RNIB
Availability: circ. 1910—(discontinued)
This device is a portable shorthand writer with a standard keyboard. Paper rolls 15/16" wide were used. A signalling device alerted the operator of the need for a fresh supply of paper. The paper feeding mechanism advanced the paper cell by cell via the movement of the keys or the spacer bar.

Name: Stainsby Braille Shorthand Machine, "G" Model
Source: RNIB
Availability: Supplier, above
Designed for taking down letters and reports from dictation. A speed of 140 words per minute can be attained. The characters are produced upward onto a roll of paper.

The machine is almost silent and incorporates the following features: plastic key tops, adjustable space key, adjustable tension, extension arms to enable a fully brailled roll to be wound back. The machine is normally operated in its case but can be removed easily.

Cat. No. 9001	£20. 17. 6
Cat. No. 9132	£ 0. 9. 0
Rolls of paper for shorthand machine, "G" model	
Cat. No. 9486	£ 0. 14. 6
Additional replacement spool for shorthand machine, "G" model	

Name: Clamp Guide for Marburg Shorthand Machine
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above
This device has been devised to hold and guide the tape when shorthand is being transcribed to the typewriter.

Name: Extension Arms for Shorthand Machine "F" Model
Source: RNIB
Availability: Supplier, above Cat. No. 9488: £0. 1. 6
Enables the typist to wind the embossed paper strip onto a spare spool for reading back. The device is suitable for the "F" model machine only.

Name: Shorthand Paper Guide and Base
Source: RNIB
Availability: Supplier, above
A simple device for reading back of braille shorthand notes. Brackets are provided for fitting the guide to desk, also spool and carrier for holding roll of shorthand. A braille scale enables the operator to locate the position reached.

Cat. No. 9175: Paper guide	£2. 17. 6
Cat. No. 9438: Base	£0. 15. 0

Name: Stenowriter Rolls
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above

For the Marburg stenowriter	0,20 DM
For the Picht stenowriter	0,70 DM

Switchboard

Name: Acoustic-Lamp Reader
Source: RNIB, Mullard Research Laboratories
Availability: Experimental prototype
Designed to enable blind operators to monitor the indicator lamps on the newer types of light-signaling telephone switchboards. The device uses a photoelectric cell, a transistor oscillator and a loudspeaker to convert the light output from the signal lamps to an audible tone and can be fitted without modification to the switchboard.

Name: Audible Output Telephone Switchboard
Source: AFB
Availability: Experimental prototype (discontinued)
This device consisted of a photocell finger probe and a buzzer.

Name: Automatic Telephone Switchboard for Multiple Handicapped
Source: St. Dunstan's, London, England
Availability: Production prototype
This switchboard has been adapted for handless operators by combining foot pedal switching with a metal probe operation of push buttons. Ten exchange lines and 50 extensions can be handled.

Name: Dialaphone
Source: Dialaphone, San Mateo, California
Availability: Supplier, above
A telephone linked unit and plastic memory tape printed in braille with preselected phone numbers. A crank is turned and the number read by touch. A button is then pushed and the number automatically dialed.

Name: Photocell Probe Attachment
Source: Bell Telephone Laboratories
Availability: Experimental prototype—1959
Experiments have been conducted with a thimble-mounted photocell device. Other experiments have been conducted with a multiple bank of photocells in a movable transport which need not be specially adapted to switchboard equipment. Adaptations suitable for foreign usage are not always applicable to American equipment; the reasons for this should be studied in detail.

Name: Tactile Panel Light Analog
Source: American Telephone & Telegraph Co.
International Telephone & Telegraph Co.
Availability: Suppliers, above Price: $15 to $35 per month
A solenoid braille attachment to standard switchboards which causes a pin to protrude on a braille panel attached to the desk top of the switchboard. The pins indicate to the operator which lines are in use.

Name: Tactile Signal and Pulse Counter for Telephone Switchboards
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Experimental prototype
The tactile signal consists of a small solenoid (made by Siemens and Halske) which when energized pushes up a pin indicating the line over which a call is being received. The lines are charged with short pulses at intervals which vary from 90 to 6 seconds. The pulses are counted electromechanically to give the charges for a call. The counter is marked with braille figures.

Name: Telephone Switchboard Operation
Source: AFB
Availability: Experimental prototype
This instrument is a plug-in switchboard device. The unit replaces telephone switchboard lamps. It fits mechanically and electrically. When a trunk or extension is called, a pin projects from the board in the location where a lamp usually lights. The pin can easily be seen or felt.

Typewriters and Accessories

Name: Braille Code Converter
Source: Mr. Hagland, Western Union Company/Veterans Administration, New York
Availability: Experimental prototype
A device built into the underside of a standard typewriter and designed to produce on a brailled paper tape a one-to-one representation of what a typist had produced

on a line of typewriting. The tape permitted the typist to check the accuracy of her typing.

Name: Braille typewriter
Source: RNIB
Availability: Experimental Prototype Approximately $70.00 for adaptation
This device is a standard typewriter which prints visual unembossed braille through the typewriter ribbon in the normal way to illustrate to a transcriber how particularly difficult passages should be embossed.

Name: Improved Edison-Mimeograph Typewriter
Source: W. G. Todd, Kansas State Institute for the Education of the Blind
Availability: Experimental prototype—circ. 1894—(discontinued)
This device was adapted for the use of the blind. No other details are available.

Name: Jitco Device
Source: David Wolf/J. I. Thompson Co., Washington, D. C.
Availability: Experimental prototype—1961
The Jitco device is not intended as a braille duplication system but parts of it can be applicable to braille duplication. The unit is an attempt to provide a blind typist with accurate tactual readout from the original typed material and with the ability to correct errors. An electric typewriter actuates a Flexowriter which, in turn, operates a tactile stimulator (one line of braille at a time). The blind typist can check for errors, correct these in the Flexowriter tape, and cause the Flexowriter to produce perfect copy on the electric typewriter.

Name: Marburg Paper Tape Typewriter
Source: Blindenstudienanstalt, Marburg/Lahn, Germany
Availability: Supplier, above 148,50 DM
This device allows the use of a pre-punched paper tape, generated in a Marburg (or other) brailler, to be wound and unwound on a special handling system, allowing the blind typist to type dictated material and to check dictation as it is typed.

Name: Typewriter for Multiple Handicapped
Source: St. Dunstan's, London, England
Availability: Supplier, above
A typewriter has been adapted for those handicapped by loss of hands as well as sight. A light alloy cover consisting of a series of terraces coincides with each bank of keys. Each terrace has holes in line with the keys which are depressed by a metal finger located in the gauntlet socket.

Name: Erasing Guide
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
This guide consists of a piece of metal approximately 1½" square and bent in a curve to fit a typewriter roller. It is attached to the body of the machine so that it comes into position four lines above the key contact point on the roller. An opening is cut into the shield to expose four letters at a time. When an error is found, the machine is backed to the error exposing it in the hole of the shield, the erasure is made and the shield lifted out of the way. Carbon copies may be erased in the same way.

Name: Paper Brake Backing Sheets
Source: RNIB
Availability: Supplier, above Cat. No. 9427: per set of 6 £0. 5. 3
Each manila backing sheet has a ridge across one edge which prevents the paper

being turned up after the last line has been reached. Supplied for use with standard machines only. To make the sheets suitable for portable typewriters ¾" must be cut from the leading edge.

Name: Typewriter Letter Guide
Source: Michael O'Callaghan, Oregon
Availability. Production prototype
The device consists of a sheet of pliable, transparent plastic, with raised guides on the back, which is folded over to the left side. When a sheet of typewriter paper is placed into the fold, a typist can put the dateline, salutation, body of the letter and closing, at the exact margin and location required.

PIANO TUNING

Name: Boring Out Tool
Source: RNIB
Availability: Supplier, above Cat. No. 9181: £1. 12. 6
This tool holds a hammer butt between two jaws which are operated by a knurled disc and have a parallel movement. The butt is bored accurately by a drill of the requisite size supplied with the tool.

Name: Felt Cutting Guide
Source: RNIB
Availability: Supplier, above Cat. No. 9189: £1. 11. 6
For cutting Pilot cloth and felts or bevelling the latter.

Name: Grand Damper Lifting Gauger
Source: RNIB
Availability: Supplier, above Cat. No. 9324: £0. 6. 9
For regulating the depth of damper on the keybed of grand pianos.

Name: Grip Screwdriver
Source: RNIB
Availability: Supplier, above
For taking out and putting screws into the action of a piano and places where it would be difficult to do so with an ordinary screwdriver.

Cat. No. 9320: 5/16" blade	£0. 4. 6
Cat. No. 9321: ¼" blade	£0. 4. 3
Cat. No. 9322: 3/16" blade	£0. 4. 3

Name: Tables of Intervals in Equal Temperament
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $.50
Beats per second, technical piano tuning, braille only, pamphlet, 8 x 10½.

Name: Vellum Hinging Tool
Source: RNIB
Availability: Supplier, above Cat. No. 9484: £0. 17. 3
A device for holding hopper or lever to ensure correct cutting of the slot. Two screws with knurled knobs converge on each other on the principle of the jaws of a vice gripping the hopper or lever in position while cutting.

Name: Wire Inserting Tool
Source: RNIB
Availability: Supplier, above Cat. No. 9323: £0. 2. 3
A tool for inserting string wire underneath the pressure bar and listing cloth.

SCIENTIFIC AND INDUSTRIAL LABORATORY

Name: Electronic Thermometer
Source: R. W. Gunderson/NYIEB
Availability: Experimental prototype
In this device a thermistor is used as a bridge arm of a standard Wheatstone bridge circuit arrangement and an audio frequency source is used as an ac voltage signal. The output of the Wheatstone bridge may either feed directly into a headphone or into an amplifier plus headphone (the latter arrangement increases sensitivity). The scale of the variable potentiometer is calibrated in degrees F or C.

Name: Color Detector
Source: Polish Union for the Blind
Availability: Experimental prototype
This device is still in the experimental stage. One system consists of a prism beam splitter which throws the component colored rays of the input white light onto a set of photocells, each of which is aligned to detect only one color. The output detection system can be any desired type, and the kind of coding system involved will depend upon the complexity of the color analysis desired. Another system utilizes photocells with uniform sensitivity throughout the visible spectrum, and with colored filters to detect appropriate radiation for each keyed photocell.

Name: Colorimeter
Source: RNIB
Availability: Experimental prototype
Light from three small lamps falls on a transparent chopper disc rotating at 3000 rpm. Three sine waves form tracks which are blacked out to give 3, 5, and 7 dark areas per revolution. Light transmitted by the transparent areas is modulated at 150, 250, and 350 cps and falls on a filter assembly of the three primary colors. Intensity of illumination is controlled by individual shutters for each filter. Light from the filter assembly falls through a sample onto a lens which in turn focuses the light onto a barrier layer photocell. This detector is coupled by a transistor amplifier to headphones in which one, two, or three modulated tones are heard. A sample which absorbs color preferentially causes a tone corresponding to that color to diminish more than the other two color tones. A color can be identified by a skilled blind operator by noting relative changes in levels of the three tones.

Name: Instrument Reading
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
Simple mechanical arrangements have been incorporated in several laboratory instruments by means of which the sound signals are produced by percussion between a moving member of the meter and a suitable sounding member which emits an informative note audible to the user. Among the laboratory setups in which this type of device has been used are: a millimeter calliper gauge with a clicking attachment, an apparatus to demonstrate the Oersted effect, experiments with convection currents, electromagnetic induction experiments, experiments with uniform and accelerated motion, and experiments with suspended magnets.

Name: Weigh Scale
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
An upright post of about 4-foot length is set into a wood base about 1 foot square and has a horizontal support at its other end of about 7" in length. A pulley is suspended from the end of this horizontal piece. On the outside of the upright post opposite the base is a circular scale about 1 foot in diameter having a center pivot holding a pointer which revolves about the disc fitted with a braille scale. The other end of the pointer axis contains a cylindrical winding stock containing several turns of string or light wire. The wire passes through the pulley at the top and down to a weight and a hook at the other end. Objects to be weighed are placed at the end of the hook. A set of weights is provided.

Name: Reaction Apparatus for Titrations
Source: A. Wexler, Australia/RNIB
Availability: Experimental prototype
In the chemical laboratory advantage is taken of the differential sensitivity of various types of photocell to construct a device for sensing color changes which is used by blind students. A common flashlight serves as light source and the detector is a photocell connected to a relay and buzzer circuit. A transparent vessel holds the indicator fluid (e.g., bromothymol blue) and additional liquid is introduced into the vessel by means of a tube leading to an external burette. The measuring technique differs from the conventional method in that the volumes of solutions reacting are measured in the reaction vessel by means of the microtact probe lowered from the external microtact device. Measurements to 0.1 ml are possible.

Name: Color Detector
Source: Technische Hogeschool
Availability: Experimental prototype
An apparatus designed to translate color changes associated with chemical reactions into an audible signal.

Name: Graph Making Aid
Source: University of Utrecht, The Netherlands
Availability: Experimental prototype
Paper impregnated with certain chemicals is used. Lines are made with a fountain pen containing another chemical and when the two chemicals come in contact, an embossed line appears.

Name: Mass Particle Counter
Source Technische Hogeschool
Availability: Experimental prototype
This device is a mass counter for physicists. No other information available.

Name: Optical Reflection Factor Probe
Source: Union of Czechoslovakian Invalids: Committee on Devices for the Blind
Availability: Experimental prototype—1961
This device is of the standard configuration, i.e., it contains a light source, photocell transducer, transistorized amplifier, and loudspeaker transducer. It is used in a variety of applications, including the location of light sources, and the determination of optical reflection factor. The latter is accomplished by comparing an unknown surface with a standard test surface for the equivalence of sound output. When both are

equal, the reflection factors are equal. A standard table of 14 test surfaces, plus magnesium oxide white, has been prepared. The table has labels in inkprint and in braille. The device is also used to locate and trace lines and geometrical figures.

Name: An Audible Scale
Source: Institute of Defectology
Availability: For schools for the blind and for workers
A condition of imbalance on a scale is indicated by an audible signal, generated through the completion of an electrical circuit through an electrically-conductive pointer (as the "hot" probe), and a return circuit through a ground-potential scale face.

SHOE MAKING

Name: Edge Plane (Superseder)
Source: RNIB
Availability: Supplier, above Cat. No. 9459: £1. 18. 9
A metal plane fitted to a wood handle for trimming the edge of the sole. The plane can be set to cut depths to ⅛" and widths to ⅜".

Name: Marking Wheel
Source: RNIB
Availability: Supplier, above Cat. No. 9460: £0. 18. 9
A toothed wheel fitted to a wood handle for marking the correct spacing of the nails or rivets. The position of the spindle is adjustable.

Name: Nail Marker
Source: RNIB
Availability: Supplier, above Cat. No. 9049: £0. 11. 0
Wood handle, with two prongs in fixed position ¼" distant from the edge guard and the depth of the prong ¼". The depth of the guard is ½".

Name: Nail Marker
Source: RNIB
Availability: Supplier, above Cat. No. 9050: £0. 7. 6
All steel with two prongs in fixed position 3/16" distant from the edge guard and depth of the prongs 3/16". The depth of the guard is ¼". Being made of metal this tool can be hammered if necessary.

Name: Nail Marker
Source: RNIB
Availablity: Supplier, above Cat. No. 9051: £0. 18. 9
With movable guard, two prongs and wood handle. The prong section is rigid, the guard opening in the form of a swivelled spring device by operating a thumb screw. The tool can be adjusted to open from ⅛" to ⅞". The prongs are ⅜" apart and ¼" deep.

Name: Waist Marker
Source: RNIB
Availability: Supplier, above Cat. No. 9052: £0. 4. 0
An all steel marker of solid construction with five prongs to the inch.

TEACHER TRAINING

Name: Braille Chart of English Braille—American Edition, 1959
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Tables and simplified rules, 12 page pamphlet, 10 x 12½.
per single copy mailed separately $ .25
per dozen $2.00

Name: Braille-N-Lightener
Source: Lynn Brooks, 2164 Ethel Porter Drive, Napa, California
Availability: Production prototype
An electrical device designed to teach a sighted person braille. It is a replica of the braille cell in lights with a keyboard identical to the braillewriter. The keyboard is designed so that the key or keys which are pressed will light up the corresponding dot or dots in the braille cell. As the cell is a replica, it is possible to make all 63 braille characters light up simultaneously. The device is basically designed to teach braille, not to produce it.

Name: Chart of French Braille Contractions
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $1.25
Contains selected reading exercise, pamphlet, 11 x 11.

Name: Chart of Mathematic Signs
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above $.50
Prepared by John B. Curtis (1942) based on *Braille Mathematical Notation* by H. M. Taylor, braille only, pamphlet, 8 x 10½.

Name: Chart of Roman Numerals
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
per single copy mailed separately $ .25
per dozen $ .80

Name: Grade 1½ Braille Chart
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Four pages, 8 x 10½.
per single copy mailed separately $ .25
per dozen $ .80

Name: Grade 1½ Contraction Sheet
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Braille with small embossed Roman letters for the sighted, 8 x 10½.
per dozen $ .30
per 100 $1.35

Name: Inkprint Chart of English Braille—American Edition, 1959
Source: Illinois Braille and Sight Saving School
Availability: Supplier, above
Contractions alphabetically arranged and including punctuation marks and most of the special symbols, 11 x 11 folder.

per single copy mailed separately	$ .25
per dozen	$1.00
per 100	$8.00

WOOD AND METALWORKING

Name: Angle Divider
Source: AFB
Availability: Supplier, above Cat. No. TC129: $3.80
A simple device to set the angle at which a shelf must be cut to fit into a given corner. Also provides a means for setting by touch the correct angle for cutting 4, 5, 6, 8, and 10 sided polygons. Two members pivoted at top of an upright are in turn connected to a sliding gauge which travels up and down in the slot in the upright. Notches make it possible to line up the gauge with the proper notches in the upright. Removable straight edge at bottom is machined to serve as a try square. Angle blades measure about 6½". Upright measures about 7⅜".

Name: Audible Carpenter's Level
Source: Surber Electronic Research Corporation, 1903½ Ninth Street, Wichita Falls, Texas
Availability: Production prototype
This level produces different tones for off level indications; total silence for level. The device also indicates vertical or plumb.

Name: Brad Pusher
Source: AFB
Availability: Supplier, above Cat. No. TC130: $2.65
Tool with wooden handle and magnetized metal plunger which moves inside spring-loaded sleeve. When brad is dropped into sleeve, plunger holds the head permitting the tool to be held upside down with nail in place. Pressure on handle drives brad home. Will take brads up to an inch in length. Mushroom shaped handle makes it possible to drive nails into fairly hard woods without a hammer. Measures 6¾" long.

Name: Carpenter's Level
Source: AFB
Availability: Supplier, above Cat. No. TS134: $7.05
Comprises a 6¼" length of ¾" angle welded at one end to a V-edged bar, and at the other to a metal plate supported by a pin. In the "level" position, the base of the V is on the bottom and a ⅞" chrome steel ball rolls freely in the angle. A calibrated screw also extends through the plate, next to the pin, for checking deviation from "level." A turn of screw changes level by ½ degree. A retaining rod keeps ball from falling out. Nickel-plated.

Name: Carpenter's Level
Source: C. Branstetter, Silverton Union High School, Oregon, Washington
Availability: Production prototype Adaptation cost $.20
This device is a simple adaptation of a standard level with a pendulum attached to it. It has been used successfully both in shop instruction and on the job for several years.

Name: Carpenter's Level
Source: RNIB
Availability: Supplier, above Cat. No. 9411: £2. 13. 0
An instrument made of metal specially designed to help blind craftsmen to determine a level surface.

Name: Centering Jig
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
In using this device the worker clamps a piece of wood or metal in a vertical position in a vise, placing a round box at the top of the material and moves two V-blocks into contact. A thumbscrew placed in one side of the box permits locking rack gears to prevent movement. A center punch is hit with a hammer which pierces the work material with a small center hole. Speed of working with this device is claimed to be 1/10 the time required by available commercial centering jigs.

Name: Chiseling Guide
Source: RNIB
Availability: Supplier, above Cat. No. 9431: £0. 1. 9
A useful aid made of wood for guiding a chisel when cutting corners in woodwork.

Name: Dovetailing Guide
Source: RNIB
Availability: Supplier, above Cat. No. 9430: £0. 1. 9
A wooden device to ensure that the blade of the tenon saw is correctly placed for cutting dovetails.

Name: Drill Positioner
Source: AFB
Availability: Supplier, above Cat. No. TS144: $.45
This positioner is a length of brass angle, cut along the corner for an inch, to permit the sides to be bent out at right angles to form flanges. Holes are provided in these flanges for attachment. This device makes it simple to drill at right angles to surfaces in any position. The drill is simply set into the angle, which will accommodate drills of any size, and will line up either twist drills or wood bits.

Name: Doweling Jig
Source: AFB
Availability: Discontinued in catalog listings
This is a device to enable the cabinet maker to locate holes for dowels accurately. Two jaws are joined at a distance of 4-9/16" by steel rods on which rides a turret arrangement which may be anchored in any position by means of a knurled screw and which serves to position and hold the drill. A vise gripping device anchors the board to be drilled and will accommodate up to 4" material. A stop is also provided to fit auger bits and control the depth of holes.

Name: Doweling Jig
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
A self-centering and self-aligning doweling jig has been completed. It enables the craftsman to drill dowel pin holes exactly in the center of a narrow edge of a board, and to space them uniformly along the length of the board. In use, the board is clamped on edge in a vise. The jig is then placed on the edge in which it is desired to place the dowel pins, holes are drilled 4" apart, and the jig re-located for another set of holes.

Name: Lathe Duplicator
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
A framework, equipped with roller-bearing carriage, runs lengthwise with a lathe in a controlled channel under the bed of the lathe. A shaft slides back and forth at right angles to the lathe travel. An arm from the shaft, bent at right angles, passes underneath the lathe to the front where a pivoted tool holder brings a cutting tool in line with the center point of the lathe. The work to be duplicated is placed in the holder; the tracing tool is adjusted to follow the pattern of the first turning; the cutting chisel is controlled manually; the chisel holder is pivoted to permit flexibility.

Name: Protractor & Sawguide
Source: AFB
Availability: Supplier, above Cat. No. TM137: $2.50
Extending to the left of a 9½" protractor is a steel arm 1¾" wide, 18" long, and standing ¼" above the work. Pivoted from the center of the protractor is a 9¾" arm, 1½" wide, and designed to rest ½" below the top surface of the work. This arm carries a pointer which travels over the scale of the protractor with a thumb nut for locking at the desired angle. Drive screws serve as raised dots at each 5 degrees with double raised dots at 30 and 60 degrees and tripple raised dots at 0 (which is 90 degrees from the base). The lines on the scale are slightly depressed so they can be felt with fingernail or scriber. Cadmium-plated finish. Weight, 1½ lbs.

Name: Sanding Machine
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
This device, using the same principle as a thickness planner, enables the blind craftsman to avoid chipping the grain on the surface of joined boards. A drum, fitted with sandpaper, is suspended in ball-bearing pillow blocks in the top of a steel frame which is fitted with swivel casters. The platform or base is raised and lowered underneath the drum by means of gears and a motor is fitted on a hinged base at the bottom of the framework. The board to be sanded is placed on the platform which is then raised to contact the lower side of the drum. The board is pushed by hand against the direction of travel of the drum and the high spots are ground off.

Name: Saw Guide, Miterite
Source: AFB
Availability: Supplier, above Cat. No. TC136: $3.75
This device may be adapted for cross-cutting and ripping, or for cutting panels. Metal sawholder is mounted in a slot on a pivoted angle. The angle is mounted on a metal base with two posts along one edge and swings through a 90-degree arc. The entire assembly may be mounted at one end of a 10" x 10" wooden base with slots cut along two sides. Cross-cutting is accomplished by setting the board against the two posts. By bolting a strip of wood beneath the base and through the slots, the assembly may be set against the edge of a board for ripping. May be used with standard hand saws and certain hack saws.

Name: Sharpening Tool
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
This sharpening aid allows the attainment of a fresh edge on many tools, including planners, lathe chisels, etc. The device consists of a clamp, bolts, wing nuts, a spacer, and V-block; the whole assembly rides on parallel steel rods about 3" apart. When the craftsman wishes to sharpen a blade, he clamps it into position, adjusts the

threaded bolts at each end to bring the blade into contact with a grinding wheel, and moves the entire clamp assembly slowly from end to end on the parallel rods while the grinding wheel is turning.

Name: Soldering Device
Source: Karl Britz, Marburg/Lahn
Availability: Experimental prototype
A sharpened carbon rod is used as the heating element. It is connected to the low voltage side of a transformer; the other terminal is joined to the solder with an alligator clip. The point of the carbon is pressed gently to the seam which is to be soldered and the top side of the seam is touched with the tinning wire. The carbon rod heats quickly and melts the solder. About 5-10 volts are needed, with currents of about 20-40 amps.

Name: Welding Rod
Source: J. F. Clunk/Enterprises for the Blind, New Jersey
Availability: Experimental prototype
In order to maintain the proper spark gap in welding, rods have been provided which maintain a constant distance between the end of the flux thread and the end of the welding material rod. Considerable experience is needed even so for the blind worker to avoid burns and to achieve a well-welded joint.

General Purpose Devices

EDUCATIONAL

PEDAGOGICAL

Name: ATD-Primus
Source: New York Institute of Technology, New York, New York
Availability: Experimental prototype
A variable sequence teaching machine is keyed to a series of prerecorded instructions on a magnetic tape recorder. When preset points in the teaching sequence are reached the tape sequences are switched in and out to guide the student further.

Name: Automated Teaching Didak 501
Source: Rheem Califone Corp.
1020 North La Brea Avenue, Hollywood 38, California
Availability: Supplier, above
The Didak 501 provides the experimenter or programmer with the variables necessary to teach and prepare material with maximum freedom from product limitation. By permitting the optional use of additional information or hints to ensure the correct answer with a "second attempt" window, the Didak provides the certainty of right answer reinforcement yet offers the elimination of this feature when it is not desirable. Material is stored on fan-folded paper tapes, and can be prepared with a typewriter, duplicated with a mimeographing process, and easily spliced for experimental changes. The fan-fold accumulates for re-use without rewinding. The student records each answer by punching a hole in the response strip. The instructor can thus check on accuracy.

Name: Plastilin
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above 3,50 DM
Plastic modelling clay

MATHEMATICAL

Name: Graph Board
Source: Lighthouse, Welfare Center for the Blind
Availability: Daimaru Chemical Industry Co., Ltd. 170 yen
Small in size and very convenient for school children.

Name: The Judy Math Boards
Source: The Judy Company, Minneapolis, Minnesota
Availability: Supplier, above per set $28.75
The Judy Math Boards are: *the Data Graphing Board,* the *Equation Board,* the *Geometric Relation Board* and the *Circle Board.* These are 23 x 23 peg boards, with 1-inch spacing of the 3/16-inch holes. The Data Graphing Board is usable for histograms, bar graphs, line graphs, etc. The Equation Board, set up for the four quadrants, is used for linear equations, quadratic equations, systems of equations, etc. The Geometric Relation Board consists of two 6-inch circular protractors and is used for showing angles, parallel lines, triangles, polygons and vectors. The Circle Board, as its name implies, is used for demonstrating the circle, arcs, chords, inscribed polygons and trigonometric functions.

Name: The Master Cube
Source: APH
Availability: Supplier, above $4.00
The device consists of a four-inch cube and cut into eight pieces. The larger blocks are grooved so that the units of length, area of volume can be easily recognized by sight or touch. In arithmetic, the blocks can be used to visualize all four fundamentals—addition, subtraction, multiplication and division. By using the solid blocks, interest is stimulated for observation, measuring and weighing of volume and capacity.

MUSIC

Name: R. C. Allen Music Typewriter
Source: Music Print Corporation, 828 Pearl Street, Boulder, Colorado
Availability: Supplier, above $450.00
The Publisher Model 814-C of this typewriter uses a one-time carbonized tape which produces a copy that is jet black and of excellent definition. Only on close examination can this copy be distinglished from the printed copy coming from a music publisher. The machine is well made and the placing of the characters is precise. There is insufficient data at present, however, to assess the potentialities of this machine for use by the blind.

Name: Keaton Music Typewriter
Source: U. S. A.
Availability: Commercially (discontinued)
This device has been designed for writing conventional notation mechanically.

HOUSEHOLD

GENERAL HOUSEHOLD

Name: Academy Electric Plugs
Source. AFB
Availability: Supplier, above Cat. No. MC219: set of 5 $.60
An Underwriter Approved plug which may be attached to two-conductor parallel lamp cord without tools. The prongs are pressed together and pulled out. This brings the plug out of the cap. The prongs are then spread apart; the wire is passed through a hole in the cap and then inserted into a hole in the plug. This is so shaped that the wire fits in only one way. When the prongs are pressed together teeth pierce each conductor. The body of the plug is then returned to the cap.

Name: Phone Rest
Source: AFB
Availability: Supplier, above Cat. No. MC218: $1.50
This model will fit any French type telephone. Both hands left free while talking.

KITCHEN

Name: Aluminum Broil Racks
Source: AFB
Availability: Discontinued in catalog listings
A nest of three racks—6, 7, and 8 inches in diameter—with wide, flat grills held on three sturdy legs. They must be placed in pie tins for easier handling in broiling foods. They are handy, too, as electric iron stands, cake coolers, hot dish holders, trivets, etc.

Name: Automatic Pancake Turner
Source: AFB
Availability: Supplier, above Cat. No. KC87: $.25
The aluminum blade is slid under the food and raised a couple of inches. When the handle is squeezed, the blade flips food over and redeposits it in same space.

Name: Cake Cutter ("Kut 'N' Serv")
Source: AFB
Availability: Supplier, above Cat. No. KC84: $1.90
V-shaped knife blade is set over round cake and pressed down. Slice may be adjusted to any size. By pressing two handles together slightly, cake may be lifted and served without danger of dropping.

Name: Can Opener
Source: AFB
Availability: Supplier, above Cat. No. KC76: $1.25
Compact, sturdy, portable can opener known as the Edlund No. 5 Junior. A 3¼" handle extends from the top and a 4¼" handle extends from one side. The cutting edge is pressed through to top of a can and the top handle is then rotated so that the can is passed around. Leaves a clean, smooth edge.

Name: Flame Tamer
Source: AFB
Availability: Supplier, above Cat. No. KC89: $2.15
Air space between the heavy metal plates converts any pot into a double boiler. It tends to prevent boil-over, sticking and scorching, as well as to protect glass cooking utensils. Base measures 6¾" in diameter and is intended to fit over grate. Top is 6" in diameter with raised edges and waffle-like indentations to reduce slippage of pan. Over-all thickness is ¾". Heavy black, baked enamel finish.

Name: Four-in-One Measuring Spoon (Plastic)
Source: AFB
Availability: Supplier, above Cat. No. KC74: $.20
At one end a tablespoon, the other end a teaspoon measure. Turned over, one end ¼, the other ½ teaspoon measure.

Name: Gas Stove Lighter
Source: AFB
Availability: Supplier, above
Old fashioned flint and steel sparking device for lighting gas stoves.
Cat. No. KC81: Stove Lighter $.25
Cat. No. KC82: Replacement Flints (pkg of 5) $.35

Name: Jar Opener
Source: AFB
Availability: Supplier, above Cat. No. KC80: $.50
Designed for opening the type of jar or bottle whose cap is usually pried off with the back edge of a knife. Two blades are set into gap between cap of jar or bottle. These spread as handles are squeezed together forcing up top. Provisions for lifting off caps of soda bottles.

Name: Knife Sharpener
Source: AFB
Availability: Supplier, above Cat. No. KC86: $1.45
Slots in a housing, which is screwed to a wall, hold the knife blade at the correct angle against hand-turned grinding wheel.

Name: Locklid Saucepan
Source: AFB
Availability: Supplier, above Cat. No. KC70: $4.50
Lid which locks in place for "cook" or "drain," set over pins inside flange. When turned to "drain" (clockwise) position exposes holes to simplify draining off liquids; 2½ qt. capacity, 10-range aluminum with black plastic handle.

Name: Magna Wonder Knife
Source: AFB
Availability: Supplier, above Cat. No. KC83: $4.65
Built-in slicing guide with adjustable thumb screw for desired thickness attached to knife blade. Blade 8¼" of heavy duty stainless steel. Handle of high impact shatter-proof plastic. (Special knife for left-handed persons. Write for details.)

Name: Mirro-Matic Pressure Cooker
Source: AFB
Availability: Supplier, above
Bouncing weight tells when desired pressure is reached. Weight has three holes drilled around its circumference and pressures of 5, 10, and 15 pounds are secured

by setting the hole on a steam vent in lid of pan. Ten-pound hole is indicated by a file mark. Lid is locked by pulling handles together. Safety fuse blows if steam vent clogs. Trivet and braille cooking charts included.

Cat. No. KM65: 4-Qt. capacity (holds 3 pint jars)	$12.30
Cat. No. KM66: 6-Qt. capacity	$15.55
Cat. No. KM67: 8-Qt. capacity (best for canning)	$19.30

Name: Ounce Liquid Measure (Slip Seal Jigger)
Source: AFB
Availability: Supplier, above — Cat. No. KC72: $.30
A pouring device which fits bottle and measures one fluid once (2 tablespoons). A plastic cup is mounted at an angle to pouring tube with an internal partition in tube so placed that when level in the cup covers the top section liquid ceases flowing. Spout on cup locates glass for emptying contents.

Name: Pie Cutting Guide
Source: AFB
Availability: Supplier, above — Cat. No. KC85: $2.70
A heavily nickel-plated wire guide for cutting a 9″ pie into six equal sections. A metal loop fits down over the pie tin. Heavy wire guides are welded to fit over the pie in triangular sectors, spaced to allow a knife to pass between them.

Name: Rotary Grater ("Mouli")
Source: AFB
Availability: Supplier, above — Cat. No. KC88: $1.10
A cheese and vegetable grater which is especially easy to clean. Handle is hinged and carries a separate arm which ends in a curved hold-down plate for pressing food against grater. Takes cubes about 2″ square. Nickel-plated.

Name: Safety Knife
Source: AFB
Availability: Discontinued in catalog listings
This is a metal-handled knife with a spring-loaded guard over the blade. As the knife is used, the material being cut pushes back the guard. Blades may be set to extend up to an inch from the handle and can be turned when one end dulls. Four spare blades are housed in the handle.

Name: Safety Spoons
Source: AFB
Availability: Supplier, above — Cat. No. KC90: per set $1.40
Set of two stainless steel cooking spoons with hooks to hold them upright at edge of kettle. Smaller spoon is slightly larger than a tablespoon, larger spoon measures 10″ over-all. The metal used is a poor heat conductor so that the handle does not ordinarily over-heat.

Name: Shortening Measure
Source: AFB
Availability: Supplier, above — Cat. No. KC75: $.45
Plastic cup to simplify measuring any firm shortening. Half-cup container which can be pushed forward to force shortening from cup. Slip in insert piston and turn to desired measure. Slots to set for ½, ⅓, ¼ cup, and 3, 2, and 1 tablespoons. Approximately 3″ in diameter and 3½″ high.

Name: Sugar Container and Measure
Source: RNIB
Availability: Supplier, above Cat. No. 9458: £0. 3. 0
The glass container holds half a pound of sugar and issues a teaspoonful each time the container is turned over. Can also be used for measuring other similar dry ingredients.

Name: Teaspoon Dispenser (Press-Flo)
Source: AFB
Availability: Supplier, above Cat. No. KC71: $.70
Intended for use in measuring a level teaspoon of sugar, soap powder or the like. (Not recommended for measuring instant coffee powder.) Transparent plastic container with base and cover holds material. Plunger operated by a button at top discharges material. Bottom stop prevents accidental spillage. Fin on plunger can be used to break up materials that have a tendency to "cake" when knob is rotated. Over-all height 7", diameter 3¼".

NEEDLEWORK

Name: Handy Magnet
Source: AFB
Availability: Supplier, above Cat. No. SEC111: $.30
Little Alnico magnet with handle, for picking up pins, small nails, and other iron or steel objects such as phonograph needles.

Name: Hem Gauge
Source: AFB
Availability: Supplier, above Cat. No. SEM112: $1.90
The Pin-It Skirt-Marking Gauge is designed to mark hems with pins accurately and quickly. A wooden rule, anchored to a floor stand, has slots down one side at each inch, and notches along the front at each quarter. A metal slide may be locked at heights from 11" to 23". When a hinged arm is pressed against the skirt, it crimps the cloth and also supplies a metal guide into which the pins are inserted.

Name: Needle Threader
Source: Lighthouse, Welfare Center for the Blind
Availability: Iko-sha 20 yen

Name: Needle Threader
Source: RNIB
Availability: Supplier, above Cat. No. 9079: £0. 0. 3
A simple aid made of light metal to enable blind persons to thread ordinary and darning needles.

Name: Needle Threaders
Source: Verein zur Förderung der Blindenbildung e.V.
Availability: Supplier, above 0,07 DM
Made of metal.

Name: Redi-Thread Needles
Source: AFB
Availability: Supplier, above Cat. No. SEC113: $.25
These are formed to carry a wire loop permanently secured to the needle eye. The wire loop, which is easy to thread, trails behind the needle and will not spread the warp or woof even in light weight materials. It is so designed that it locks even nylon thread in place. Sold in cards of three needles.

Name: Self-threading Needles
Source: Lighthouse, Welfare Center for the Blind
Availability: Iko-sha 1 packet (10 needles) 50 yen

Name: Self-Threading Needles
Source: RNIB
Availability: Supplier, above
To threading of Calyx-Eye needles which can be easily threaded by the blind.

Cat. No. 9110: Sharps, size 4, packet of 5	£0. 0. 6
Cat. No. 9111: Sharps, size 6, packet of 5	£0. 0. 6
Cat. No. 9112: Sharps, size 8, packet of 5	£0. 0. 6
Cat. No. 9113: Darners, assorted, packet of 6	£0. 0. 6

Name: Self-Threading Needles, Milward
Source: AFB
Availability: Supplier, above Cat. No. SEC114: $.15
British Calyx-Eye Needles, assorted. These needles have a slit eye, and the thread is stretched across the slot at the end of the needle, then pulled into the eye; packed 5 needles per package.

Name: Self-Threading Needles, Sharps
Source: AFB
Availability: Supplier, above Cat. No. SEC115: $.20
German Calyx-Eye Needles, similar to SEC114. Sizes 3 to 7 assorted. Packet 12 needles per package.

Name: Tidee Maid Sewing Box
Source: AFB
Availability: Supplier, above Cat. No. SEC120: $2.25
Case of clear polystyrene measuring 9" x 3" x 2" high. Lid has extra section with separate hinged cover in which thimble, buttons, needles, pins, etc., can be stored. Fourteen posts in bottom for standard-sized spools of thread. Thread is put through slot opposite post, cover attached and any desired length can be cut by means of knife blades in lid. Furnished with one roll of Labelon Tape ¾" wide for use in marking thread compartments.

Name: Threadmaster
Source: RNIB
Availability: Supplier, above Cat. No. 9482: £0. 0. 9
A device made of plastic to enable blind persons to thread ordinary needles.

Name. Wink Needle Threader
Source: AFB
Availability: Supplier, above Cat. No. SEC117: $.70
Can be used to thread a wide variety of needles, including small-sized darning needles and sewing needles. Directions provided. Comes in plastic container which holds threads and needles.

Name: Wire Loop Threaders
Source: AFB
Availability: Supplier, above Cat. No. SEC116: free of charge—sent upon request
Metal tabs with wire loops which pass through eye of larger sized needles so that thread can be placed in loop and drawn through eye of needle.

Name: Witch Needle Threader
Source: AFB
Availability: Supplier, above Cat. No. SEC118: $.80
This threader has a plastic base into which the threader itself slides. Complete directions provided.

PERSONAL

LABELS AND TAGS

Name: Labelon Tape
Source: AFB
Availability: Supplier, above.
A pressure sensitive adhesive tape which can be brailled on a regular braille slate by sticking lightly to the top flap of the slate and proceeding to braille. Released by pushing up a corner with the stylus.

Cat. No. MC216: size ¾″ x 80″	$ .55
Cat. No. MC217: size 1″ x 400″	$2.45

Name: Plasti-Stick Labels
Source: AFB
Availability: Supplier, above Cat. No. MC211: $.90
A means of permanently attaching braille lables to records, jars, etc. The material is translucent when applied so print can be read through it. Clear vinylite sheeting is laminated with a pressure sensitive adhesive which has a thin plastic protective coating. After the braille has been written the plastic is cut to label size and placed in water for one minute. It is then dried and the coating removed. The label sticks immediately and the adhesive will set permanently within 24 hours. Plastic is .010″ thick and comes in sheets about 9½″ x 13½″, enough for about 256½″ of braille.

Name: Self Adhesive Metal Foil Labels
Source: RNIB
Availability: Supplier, above.
Metal foil labels which may be easily embossed with braille or other symbols and used for labeling a variety of articles.

Cat. No. 9400: 2″ x 1″, per 3 dozen	£0. 1. 0
Cat. No. 9401: 3″ x 2″, per 3 dozen	£0. 2. 3
Cat. No. 9402: 12″ x 1¼″, per 1 dozen	£0. 1. 9

Name: Treasury Tags
Source: RNIB
Availability: Supplier, above Cat. No. 9441: per dozen £0. 0. 6
Made of soft colored string strongly fastened to the center of a metal tag at both ends and recommended for securing together punched brailled sheets.

MEDICAL

Name: Drop-A-Time Drop Measure
Source: AFB
Availability: Supplier, above Cat. No. MEC106: $.25
A conventional rubber bulb and glass medicine dropper with a newly designed bulb to permit counting the drops. The bulb is reduced in size at the top to leave a little bulb above the main one. When the tiny bulb is depressed, a drop is released. After each drop, it is necessary to move the dropper from side to side to allow the air bubble to be dislodged from the bottom. Supplied with a one-ounce medicine bottle.

Name: Medaseptic Teaspoon Measure
Source: AFB
Availability: Supplier, above Cat. No. KC73: $.90
Glass tube about ½" in diameter and 4 ¾" long, terminating in a spout in the bottom inch. Rubber ball at top serves to draw liquid into the syringe and discharge it. Rubber ball easily removed for cleaning tube.

Name: Steritube
Source: AFB
Availability: Supplier, above Cat. No. MEC103: $1.95
Leakproof metal case for carrying sterile insulin syringe and needle in alcohol. For use on trips. Case is 7" long and weighs 2 oz.

MISCELLANY

Name. Coin Changer
Source: AFB
Availability: Supplier, above Cat. No. MC208: $5.25
A McGill "High Speed" changer with four barrels—for pennies, nickels, dimes, and quarters. Designed to deliver single coin at a time, but penny barrel may be adjusted for various numbers of coins; 5½" long x 4" high x 1½" deep. Weight 14 oz.

Name: Jumbo Delinter Brush
Source: AFB
Availability: Supplier, above Cat. No. MC206: $.70
This brush, which is made at one of the workshops for the blind, is said to be one of the most effective on the market. It has a 9" natural-finish hardwood back and handle ⅞" wide and is supplied with three 4½" rows of 1½" very thin bristles.

Name: Key Keeper
Source: AFB
Availability: Supplier, above Cat. No. MC210: $1.00
A chromium-plated, button shaped holder with spring which keeps a chain wound up until keys on hook at end are to be used. Equipped with pin for fastening inside handbag or to dress. Button measures 15/16" in diameter and chain pulls out for 14". Holds 2 cylinder-type house keys, one mailbox key.

Name: Pocket Ashtray
Source: AFB
Availability: Supplier, above Cat. No. MC205: $.80
Reproduction of a smoking cigarette on cover distinguishes this from a compact. Made of gold colored metal, it measures 1-11/16" x 2¼" x ½" thick. Snap lock with cigarette rest on trough inside.

WRITING

Name: Marks-A-Lot Felt Nib Pen
Source: AFB
Availability: Supplier, above Cat. No. WC204: $.55
Suitable for printing because it leaves a bold, black line which dries almost instantly.

VOCATIONAL

DRAWING AND DRAFTING

Name: Aluminum Foil for Diagram Making
Source: RNIB
Availability: Supplier, above Cat. No. 9390: per 2 lb pkg £0. 11. 3
Sheets of aluminum foil, .003″ thick, which when placed on a firm but resilient surface can be embossed with diagrams and simple pictorial representations.

GENERAL PURPOSE TOOLS

Name: Champ Hand-Tool
Source: AFB
Availability: Supplier, above Cat. No. TC131: $5.25
Multi-purpose tool of particular value to radio mechanics. Combines a wire-stripper, wire antlers, wire gauge, a device to attach solderless connectors, and cutters for 4/40, 6/32, 8/32, 10/32, and 10/24 machine screws. Screw is inserted into proper threaded opening to desired depth. Jaws are closed snapping off excess length leaving threads of screw undamaged and ready to receive a nut without filing or dressing. Pliers, with plastic covered handles, measure 5″ long .

Name: Directional Compass
Source: AFB
Availability: Supplier, above Cat. No. MS209: $3.40
Housed in a case measuring 2¼″ in diameter, ¾″ thick and weighing 2 ozs. There are two pointers: a magnetic steel needle pointed on the "north" end and rounded at the "south" and a serrated brass pointer which can be locked at the center or pivot point to mark a set course.

Name: Grab All Tool
Source: AFB
Availability: Supplier, above Cat. No. TC133: $.50
Conventient for piano tuners as well as others, this tool has a variety of applications. When spring-loaded plunger at top is pressed, four wire grabbers spread out from bottom. Releasing button causes grippers to close on item to be held.

Name: Magnagrip
Source: AFB
Availability: Supplier, above Cat. No. TC135: $1.95
Magnetic tool or knife holder measuring 1″ x ⅞″ thick. White enamel finish with

two powerful bar magnets mounted in parallel along length. It may be mounted on wall above bench or kitchen table and any steel or iron tool or appliance set against it will be held securely. Does not lose magnetism.

Name: Precision Pressure Lock Wrench
Source: AFB
Availability: Supplier, above Cat. No. TC143: $3.80
This BMC wrench is a versatile all-purpose tool which can apply more than a ton of gripping pressure, and lock it there, and yet can be operated with only one hand. It is adjustable for thicknesses from 0″ to 1″, the adjustment being made by means of a knurled nut on the side of the tool. The jaws remain parellel at all dimensions. It is a particularly handy tool for piano tuners and metal workers.

Name: Quik-Wedge Screwdriver
Source: AFB
Availability: Supplier, above
A split-blade screwdriver which grips slots of screws from Size No. 4 up. Pressing sleeve towards screw increases thickness of blades gripping slot of screw. Plastic handle.

Cat. No. TC138: 4″ blade	$1.10
Cat. No. TC139: 6″ blade	$1.15

Name: Saw Guide
Source: AFB
Availability: Discontinued in catalog listings
This device does not hold the saw, but lets the workman know when he is getting off the line. A saw slot extends beyond the width of boards up to 12″ wide. A length of angle is held at right angles to the slot so that the tool acts as a square. The support for this angle has an extra hole so that it can be set to provide for 45 degree cuts. An additional length of angle is provided so that it can parallel the other and support a rip fence by means of which wider boards or long lengths can be cut.

Name: Screw Starter
Source: AFB
Availability: Supplier, above
A knurled aluminum handled tool with a screw driver blade, the center section of which turns under spring tension to grip the sides of the screw slot. A knurled sleeve "cocks" this center section to line up with the two outer sections. When a screw is pressed against the blade, the center section is released and turns to grip the screw securely enough to withstand a 15 lb pull.

Cat. No. TC140: 2¾″ length blade	$1.85
Cat. No. TC141: 6″ length blade	$1.95

Name: Speed Soldering Iron
Source: AFB
Availability: Supplier, above Cat. No. TC142: $5.90
This Weller soldering iron heats and cools so rapidly that work can always be positioned by touch while the iron is cold. Heats to soldering heat in ten seconds, and cools in a fraction of a minute. It has a transformer in its handle, and power is applied only while the trigger is pressed. Soldering element is a loop of nickel-plated wire, easily shaped to meet specific requirements. For use on ac current only.

MUSIC

Name: Lily Pavey Music Typewriter
Source: Lily Pavey, London, England
Availability: Experimental prototype
This device is a music typewriter which has been designed to reproduce both in pitch and duration tones that have been or are about to be printed by the typewriter. It also permits the operator to sing successive tones through a microphone and their relative durations will appear visually on a dial.

OFFICE AND CLERICAL

Name: Multilingual Phonetic Typewriter
Source: Dr. Toshiyuki Sakai, Kyoto University, Kyoto, Japan
Availability: Experimental prototype—1962
A multilingual phonetic typewriter for transforming the human voice into typed symbols. The unit has three sub-systems—a phoneme classifier, control system, and speech analysis system. It uses 5000 diodes and 3000 transistors. At present the typewriter translates speech sounds into code-like symbols but further research will permit segmentation into linguistic symbols.

Name: Voice Actuated Typewriter
Source: Dr. Harry F. Olson, Herbert Belar, RCA Laboratories Acoustical Research Program
Availability: Experimental prototype—1962
A phonetic typewriter which changes human speech into print. A one-syllable word is spoken into a microphone which changes the sound vibrations into electrical energy with the same pattern. The electrical current is routed through a compressor-amplifier which makes sounds come out at the same volume level, then simultaneonsly sent through eight filters, each one tuned to a narrow range of frequencies. A miniature timing device connected to each filter determines how long specific frequency bands are dominant. The split-up and timed syllable is then routed to a bank of 40 lights which give an electrical picture of what each syllable sounds like to the machine. For syllables that require more than one letter to be typed out, a special switch is capable of setting off several keys in a predetermined sequence. This model has a potential vocabulary of 100 syllables with a typing speed of about 60 syllables a minute.

SOUND EQUIPMENT

Name: Microphone
Source: AFB
Availability: Supplier, above Cat. No. MC224: $9.85
An Astatic crystal microphone with unusual sensitivity, good frequency response, and low harmonic distortion. The head is shaped like a bullet head and is equipped with a handle, which may be set into a base (included) for use as a desk mike. On-off switch in handle. Bronze and brown finish.

Name: Rubber Cushions
Source: AFB
Availability: Supplier, above Cat. No. MC223: $.80
Sponge rubber, army-type ear cushions to fit headphones. Easily slid on or removed. About 3½" in diameter and 1¼" thick. Weight of pair, 2 oz.

Name: Rubber Turntable Mats
Source: AFB
Availability: Discontinued in catalog listings
Gum rubber mats which can be placed on any phonograph turntable to prevent record slipping and help reduce motor rumble in the reproduction.

Name: Synchroreader and Synchrosheet
Source: Canon Camera Co., Inc. 312 Shimonaruko-cho, Ohta-ku, Tokyo, Japan
Tokyo Denki Kagaku Kogyo Co., Ltd.
2 Kanda-Matsuzumi-cho, Chiyoda-ku, Tokyo, Japan
Availability: Suppliers, above Price not known
On the front side of the Synchrosheet there are pictures, diagrams, or an article for reading, while on the reverse side sound and voice corresponding to the article or diagrams are recorded. When the sheet is placed on the Synchroreader, one can read the article while simultaneously listening to voice and sound. The magnetic film is applied to a sheet of paper by a printing machine. Recording time per sheet is 5 or 10 minutes. The recorded sheets can be filed or bound together and stored for future reference. Canon Camera Co., Inc. is manufacturer of the Synchrosheet and Tokyo Denki Kagaku Kogyo Co., Ltd. is producer of the Synchroreader.

Name: Tape Threader
Source: Hermann Scherchen, Elektroakustische Experimentalstudio, Gravesano, Switzerland
Availability: Production prototype
A remarkably simple device designed to ease the problem of introducing tape onto the take-up reel of a standard reel-to-reel tape player/recorder. It consists of an arm containing a slot for the tape which is pivoted at the inner hub of the plastic tape reel. In use, the tape is simply dropped into the slot and the machine started. As the reel turns, the arm is drawn back into the hub area and the tape winds around the center. Patents securing its free use to the blind user have already been applied for.

CATALOG SOURCES

American Foundation for the Blind, Inc. (AFB)
15 West 16th Street
New York 11, New York, U.S.A.

American Printing House for the Blind (APH)
1839 Frankfort Avenue
Louisville, Kentucky, U.S.A.

Blindenstudienanstalt Marburg/Lahn
Am Schlag 8
Marburg/Lahn, West Germany

Braille Institute of America, Inc.
741 North Vermont Avenue
Los Angeles 29, California, U.S.A.

De Blindas Förening
Gotlandsgatan 46
Stockholm Sö, Sweden

Enterprises for the Blind, Inc.
609 Pearl Street
Camden 2, New Jersey, U.S.A.

Howe Press of Perkins School for the Blind
175 North Beacon Street
Watertown 72, Massachusetts, U.S.A.

Illinois Braille and Sight Saving School
658 East State Street
Jacksonville, Illinois, U.S.A.

Institute of Defectology
Academy of Pedagogical Sciences
Moscow, R.S.F.S.R.

Lighthouse, Welfare Center for the Blind
17, Nishi 3-Chome, Showa-cho, Abeno-ku
Osaka City, Japan

National Research Council of Canada
Radio and Electrical Engineering Division
Ottawa 2, Canada

New York Institute for the Education of the Blind (NYIEB)
999 Pelham Parkway, North
Bronx, New York, U.S.A.

Polish Union for the Blind
(Polski Zwiazek Niewidomych)
Zarzad Glowny
Warsaw, Poland

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224-6-8 Great Portland Street
London, W. 1, England

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191 Marylebone Road
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